

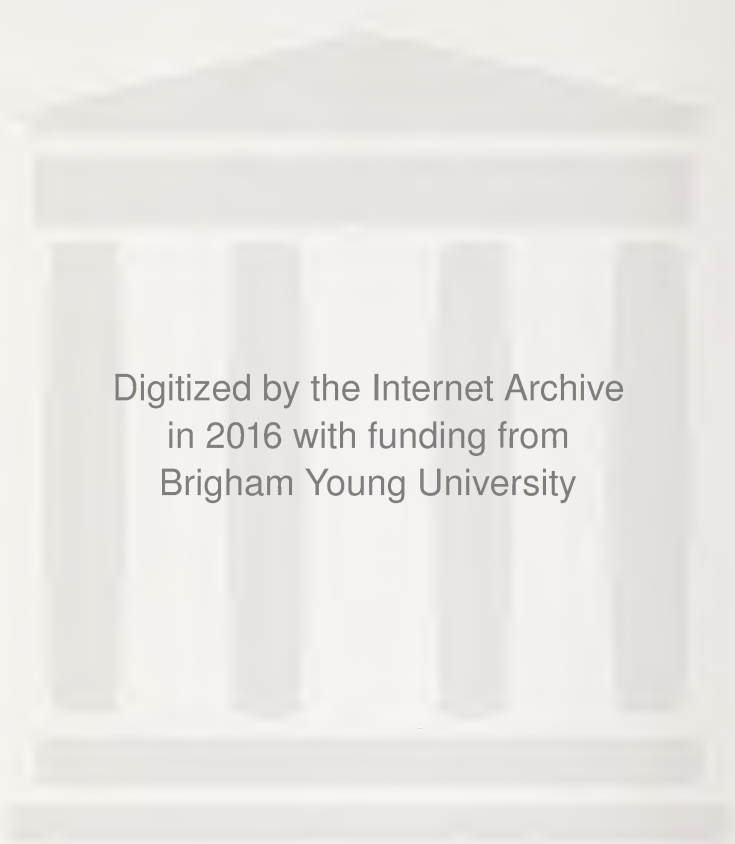
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BRIGHAM YOUNG UNIVERSITY BULLETIN



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University Calendar

Fall Semester 1972

- June 30** Last date for filing application material for degree-seeking status for Fall Semester.
- July 15** Last date for filing application materials for nondegree status for Fall Semester.
- August 31** Registration for graduate students.
- September 5** First day of class instruction.
- December 16-22** Final examination period.

Winter Semester 1973

- November 15** Last date for filing application materials for degree-seeking status for Winter Semester.
- December 10** Last date for filing application materials for nondegree status for Winter Semester.
- January 4** Registration for graduate students.
- January 8** First day of class instruction.
- April 13-19** Final examination period.
- April 20** (Reserved for possible commencement exercises.)

Spring Term 1973

- March 10** Last date for filing application materials for degree-seeking status for Spring Term.
- March 20** Last date for filing application materials for nondegree status for Spring Term.
- April 26-27** Registration for graduate students.
- April 30** First day of class instruction.
- June 21** Last day of class and examinations.
- June 22** (Reserved for possible commencement exercises.)

Summer Term 1973

- May 15** Last date for filing application materials for degree-seeking status for Summer Term.
- May 30** Last date for filing application materials for nondegree status for Summer Term.
- June 22-23** Registration for graduate students.
- June 25** First day of class instruction.
- August 16** Last day of class and examinations.
- August 17** (Reserved for commencement exercises.)

Administration and Faculty

The First Presidency of The Church of Jesus Christ of Latter-day Saints

Joseph Fielding Smith	President
Harold B. Lee	First Counselor
N. Eldon Tanner	Second Counselor

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Joseph Fielding Smith	President
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Associate Commissioner, Business and Finance, and Secretary of the Executive Committee and Board of Trustees	Dee F. Andersen
Associate Commissioner, Colleges and Schools	Kenneth H. Beesley
Associate Commissioner, Seminaries and Institutes	Joe J. Christensen

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Assistant Vice-President for Business	Fred A. Schwendiman
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Administrative Assistant to the President	Bruce C. Hafen
Assistant to the President in Charge of Communications	Heber G. Wolsey
Dean of Students	J. Elliot Cameron
Director of Physical Plant	Sam F. Brewster

Graduate School

Dean of the Graduate School	Chauncey C. Riddle
-----------------------------------	--------------------

Deans of Colleges

Biological and Agricultural Sciences	A. Lester Allen
Business	Weldon J. Taylor
Education	Stephen L. Alley
Family Living	Blaine R. Porter
Fine Arts and Communications	Lorin F. Wheelwright
General College	Lester B. Whetten
Humanities	Bruce B. Clark
Industrial and Technical Education	Ernest C. Jeppsen
Nursing	Maxine Cope
Physical and Engineering Sciences	Armin J. Hill
Physical Education	Milton F. Hartvigsen
Religious Instruction	Roy W. Doxey
Social Sciences	Martin B. Hickman

Deans and Directors of General Areas

Admissions and Records	Robert W. Spencer
Division of Continuing Education	Stanley A. Peterson
Director of Research	Leo P. Vernon

Graduate Council

Representatives of Academic Areas

Richard D. Sagers, Biological and Agricultural Sciences. Term expires September 1, 1972.
Edward L. Christensen, Business. Term expires September 1, 1972.
A. John Clarke, Education. Term expires September 1, 1972.
Richard W. Hanks, Engineering Sciences. Term expires September 1, 1974.
Wesley Burr, Family Living. Term expires September 1, 1973.
Don L. Earl, Fine Arts. Term expires September 1, 1972.
M. Carl Gibson, Humanities. Term expires September 1, 1973.
Jerry D. Grover, Industrial and Technical Education. Term expires September 1, 1974.
James T. Duke, Social Sciences. Term expires September 1, 1972.
Donald W. Robinson, Physical Sciences. Term expires September 1, 1973.
Donald D. Shaw, Physical Education. Term expires September 1, 1973.
Ellis T. Rasmussen, Religious Instruction. Term expires September 1, 1974.

Members at Large

Dean B. Farnsworth. Term expires September 1, 1972.
Arthur R. Watkins. Term expires September 1, 1973.
Bertrand F. Harrison. Term expires September 1, 1973.
Jae R. Ballif. Term expires September 1, 1974.
Chauncey C. Riddle, Dean, Graduate School, Chairman.

Ex Officio

Robert K. Thomas, Academic Vice-President.
Donald K. Nelson, Director of Libraries.
Leo P. Vernon, Director of Research.

Directors of Academic Programs

Graduate Department of Library and Information Sciences	H. Thayne Johnson
Institute of Government Service	Karl N. Snow, Jr.
Master of Business Administration	Robert H. Daines

Department Chairmen and Graduate Coordinators

Department	Chairman	Coordinator
Accounting	Leon W. Woodfield	Dale H. Taylor
Agronomy and Horticulture.....	Laren R. Robison	W. Derby Laws
Ancient Scripture	Robert C. Patch	Robert C. Patch
Animal Science	R. Phil Shumway	R. Phil Shumway
Anthropology and Archaeology....	Merlin G. Myers	M. Wells Jakeman
Art	W. Douglas Stout	Frank M. Tippetts
Astronomy (See Physics and Astronomy)		
Botany and Range Science.....	Dayna L. Stocks	Earl M. Christensen
Business Education	G. Edward Nelson	Devern J. Perry
Chemical Engineering Science ...	L. Douglas Smoot	Richard W. Hanks
Chemistry	Richard T. Hawkins	Keith P. Anderson
Biochemistry		Marvin A. Smith
Child Development and Family Relationships	J. Joel Moss	J. Joel Moss
Church History and Doctrine ...	LaMar C. Berrett	LaMar C. Berrett
Civil Engineering Science.....	D. Allan Firmage	S. Olani Durrant
Classical, Biblical, and Middle Eastern Languages	J. Reuben Clark III	R. Douglas Phillips
Communications	Edwin O. Haroldsen	Owen S. Rich
Economics	Larry T. Wimmer	J. Kenneth Davies
Education		
Educational Administration ..	Ralph B. Smith	Curtis N. Van Alfen
Educational Psychology	Darwin F. Gale	Curtis N. Van Alfen
Elementary Education	Max J. Berryessa	Curtis N. Van Alfen
Secondary Education and Foundations	Wallace E. Allred	Curtis N. Van Alfen
Electrical Engineering Science....	Ferril A. Losee	Richard Woodbury
English	Dale H. West	Dean B. Farnsworth
Food Science and Nutrition	John Hal Johnson	Marion Bennion
French and Italian	Norman C. Turner	Harold W. Lee
Geography	Robert L. Layton	Robert L. Layton
Geology	J. Keith Rigby	Lehi F. Hintze
Germanic Languages	Arthur R. Watkins	Murray F. Smith
Health Sciences	Ray Watters	Donald D. Shaw
History	De Lamar Jensen	Eugene E. Campbell
Home Economics Education	Ruth E. Brasher	Ruth E. Brasher
Humanities and Comparative Literature	Ralph A. Britsch	Ralph A. Britsch
Industrial Education	William E. McKell	William E. McKell
Linguistics	Robert W. Blair	Robert W. Blair
Mathematics	Kenneth L. Hillam	Kenneth L. Hillam
Mechanical Engineering Science	John M. Simonsen	John N. Cannon
Microbiology	David M. Donaldson	David M. Donaldson
Music	A. Harold Goodman	Don L. Earl
Organizational Behavior	William G. Dyer	William G. Dyer
Physical Education	Elmo S. Roundy	Donald D. Shaw
Physics and Astronomy	John H. Gardner	Andrew L. Gardner
Political Science	Ray C. Hillam	Doyle W. Buckwalter
Psychology	Darhl M. Pedersen	Robert J. Howell
Recreation Education	William J. Hafen	Donald D. Shaw
Sociology	Evan T. Peterson	Phillip R. Kunz
Spanish and Portuguese	M. Carl Gibson	M. Carl Gibson
Speech and Dramatic Arts	Parley W. Newman	
Communicative Habilitation ..		Ross M. Weaver
Dramatic Arts		Charles A. Henson
Speech		J. LaVar Bateman
Statistics	H. Gill Hilton	Gary B. Beus
Zoology	Joseph R. Murphy	Ferron L. Andersen

Coordinators of Areas

Asian Studies	Spencer J. Palmer
Latin-American Studies	Lyman S. Shreeve, Sr.

The Faculty of the Graduate School

The faculty of the Graduate School consists of members of the general faculty who are approved by a committee of graduate faculty from among those who hold the rank of professor or associate professor, or assistant professor with a doctoral degree. For special reason related to exceptional qualification, the Graduate Council is authorized to appoint to the graduate faculty a member who does not hold the doctoral degree.

Emeriti

- Beulah Ream Allen** Professor Emeritus of Nursing (1961)
Diploma, Illinois Training School for Nurses, Cook County Hospital, Chicago, Illinois, 1922; B.A., University of Utah, 1928; M.D., University of California, 1932.
- Owen L. Barnett** Associate Professor Emeritus of Educational Administration
B.S., M.S., Brigham Young University, 1923, 1927. (1950)
- Clarence S. Boyle** Professor Emeritus of Marketing (1927)
B.S., Brigham Young University, 1924; M.S., Ed.D., New York University, 1926, 1941.
- Jennie Campbell** Associate Professor Emeritus of Education (1952)
B.S., Brigham Young University, 1928; M.A., Teachers College, Columbia University, 1937.
- Clawson Y. Cannon, Sr.** Professor Emeritus of Animal Science (1956)
B.S., Utah State University, 1913; M.S., Ph.D., Iowa State College, 1924, 1927.
- Thomas E. Cheney** Professor Emeritus of English (1945)
B.S., Utah State University, 1930; M.A., University of Idaho, 1936.
- Monroe H. Clark** Associate Professor Emeritus of Philosophy of Education
and Guidance (1945)
B.A., Columbia University, 1923; M.A., Brigham Young University, 1927.
- Evan M. Croft** Associate Professor Emeritus of Business Education (1936)
B.S., Brigham Young University, 1929; M.S., University of Southern California, 1940.
- Gerrit de Jong, Jr.** Professor Emeritus of Modern Languages; Dean
Emeritus, College of Fine Arts (1925)
B.A., M.A., University of Utah, 1920, 1925; Ph.D., Stanford University, 1933.
- J. Orval Ellsworth** Professor Emeritus of Religion (1954)
B.S., Utah State University, 1917; M.S., Ph.D., Cornell University, 1924, 1926.
- Harvey Fletcher** Professor Emeritus of Physics; Dean Emeritus,
College of Physical and Engineering Sciences (1952)
B.S., Brigham Young University, 1907; Ph.D., Chicago University, 1911; hon. Sc.D.,
Columbia University, 1935; hon. Sc.D., Kenyon College, 1942; hon. Sc.D., Stevens
Institute of Technology, 1942; hon. Sc.D., Case School of Applied Sciences, 1942;
hon. Sc.D., University of Utah, 1944; hon. Sc.D., Brigham Young University, 1954.
- LeRoy R. Hafen** Professor Emeritus of History (1954)
B.A., Brigham Young University, 1916; M.A., University of Utah, 1919; Ph.D.,
University of California, 1924; Litt.D., University of Colorado, 1935.
- Wayne B. Hales** Professor Emeritus of Physics and Mathematics;
Dean Emeritus, General College (1930)
B.A., Brigham Young University, 1916; M.A., University of Utah, 1922; Ph.D.,
California Institute of Technology, 1926.
- George H. Hansen** Professor Emeritus of Geology and Geography (1927)
B.S., Utah State University, 1918; M.S., Ph.D., George Washington University, 1925,
1927.
- Charles J. Hart** Professor Emeritus of Recreation and of Physical and
Health Education (1925)
B.S., Utah State University, 1922; M.A., Ed.D., New York University, 1932, 1945.
- C. Lynn Hayward** Professor Emeritus of Zoology (1930)
B.S., M.S., Brigham Young University, 1927, 1931; Ph.D., University of Illinois, 1941.
- Gustave O. Larson** Associate Professor Emeritus of History and
History of Religion (1954)
B.A., M.A., University of Utah, 1920, 1926.

- Florence Jepperson Madsen** Professor Emeritus of Music (1910)
B.M., M.M., Chicago Musical College, 1926, 1927; Doctor of Music, Boguslawski College of Music, 1932; B.A., Brigham Young University, 1934; M.M., hon. Doctor of Music, Chicago College of Music, 1933.
- J. C. Moffitt** Professor Emeritus of Educational Administration (1953)
B.S., M.S., Brigham Young University, 1926, 1929; Ph.D., University of Chicago, 1940.
- Sadie O. Morris** Professor Emeritus of Food and Nutrition (1957)
B.S., M.S., Utah State University, 1921, 1922; Ph.D., Columbia University, 1933.
- T. Earl Pardoe** Professor Emeritus of Speech (1919)
B.A., Brigham Young University, 1925; M.A., University of Southern California, 1931; Ph.D., Louisiana State University, 1936.
- Hugh W. Peterson** Professor Emeritus of Chemistry (1927)
B.A., M.A., Brigham Young University, 1916, 1928; Ph.D., State University of Iowa, 1936.
- J. Wyley Sessions** Professor Emeritus of Religious Philosophy (1939)
B.S., Utah State University, 1911; M.A., University of Idaho, 1928.
- Sidney B. Sperry** Professor Emeritus of Old Testament Languages and Literature (1932)
B.A., University of Utah, 1917; M.A., Ph.D., University of Chicago, 1926, 1931.
- Orea B. Tanner** Associate Professor Emeritus of English (1938)
B.A., Brigham Young University, 1932; M.A., Columbia University, 1953.
- Vasco M. Tanner** Professor Emeritus of Zoology (1925)
B.A., Brigham Young University, 1915; M.A., University of Utah, 1920; Ph.D., Stanford University, 1925.
- L. Elliott Tuttle** Associate Professor Emeritus of Geography (1936)
B.S., M.S., Brigham Young University, 1938, 1948.
- Karl E. Young** Professor Emeritus of English (1930)
B.A., M.A., Oxford University (England), 1930, 1934.

Faculty

- George M. Addy** Professor of History (1957)
B.A., M.A., Brigham Young University, 1948, 1950; Ph.D., Duke University, 1957.
- Thomas G. Alexander** Associate Professor of History (1964)
B.S., M.S., Utah State University, 1960, 1961; Ph.D., University of California at Berkeley, 1965.
- A. Lester Allen** Professor of Zoology;
Dean, College of Biological and Agricultural Sciences (1954)
B.A., Ph.D., University of California at Los Angeles, 1946, 1951.
- James B. Allen** Professor of History (1963)
B.S., Utah State University, 1954; M.A., Brigham Young University, 1956; Ph.D., University of Southern California, 1963.
- Mark K. Allen** Professor of Psychology (1946)
B.A., Brigham Young University, 1926; M.A., Ph.D., Stanford University, 1935, 1955.
- Stephen L. Alley** Professor of Educational Philosophy;
Dean, College of Education (1956)
B.S., M.S., University of Utah, 1947, 1951; Ed.D., Harvard University, 1958.
- Dorald M. Allred** Professor of Zoology (1956)
B.A., M.A., Brigham Young University, 1950, 1951; Ph.D., University of Utah, 1954.
- G. Hugh Allred** Associate Professor of Child Development and Family Relationships (1966)
B.A., M.A., Brigham Young University, 1957, 1960; Ed.D., University of Oregon, 1966.
- R. Chase Allred** Professor of Agronomy (1955)
B.S., Brigham Young University, 1948; M.S., Kansas State College, 1949; Ph.D., University of Nebraska, 1952.
- Ruel Acord Allred** Associate Professor of Elementary Education (1961)
B.S., M.S., Brigham Young University, 1954, 1958; Ed.D., University of Oregon, 1965.
- Wallace E. Allred** Assistant Professor of Secondary Education and Foundations (1956)
B.S., M.Ed., Brigham Young University, 1956, 1957; M.S., Oregon State University, 1964; Ph.D., University of Utah, 1971.
- Philip E. Allsen** Professor of Physical Education for Men (1966)
B.S., Ricks College, 1955; M.S., Brigham Young University, 1960; Ed.D., University of Utah, 1965.

- Blaine Wright Andersen** Professor of Mechanical Engineering Science (1970)
B.S., University of Utah, 1949; M.S., Ph.D., University of Illinois, 1951, 1953.
- Ferron Lee Andersen** Associate Professor of Zoology (1966)
B.S., M.S., Utah State University, 1957, 1960; M.S., University of Illinois, 1962;
Ph.D., Utah State University, 1963.
- H. Verlan Andersen** Professor of Accounting (1965)
B.S., Brigham Young University, 1940; J.D., Stanford University, 1946; LL.M.,
Harvard University, 1948.
- William Ralph Andersen** Professor of Botany (1966)
B.S., M.S., Utah State University, 1956, 1958; Ph.D., University of California, 1963.
- C. Dixon Anderson** Associate Professor of Spanish (1956)
B.A., Brigham Young University, 1953; M.A., Ph.D., University of Texas, 1956,
1965.
- Keith P. Anderson** Professor of Chemistry (1953)
B.A., Brigham Young University, 1946; Ph.D., Cornell University, 1950.
- Lane K. Anderson** Assistant Professor of Accounting (1970)
B.A., M.Acc., Brigham Young University, 1965, 1966; MBA, Ph.D., University of
Wisconsin, 1970, 1970; CPA, Utah, 1970
- Richard L. Anderson** Professor of Ancient Scripture (1955)
B.A., M.A., Brigham Young University, 1951, 1957; LL.B., Harvard University, 1954;
Ph.D., University of California at Berkeley, 1962.
- Hyrum L. Andrus** Professor of Church History and Doctrine (1956)
B.S., Ricks College, 1951; M.S., Brigham Young University, 1952; DSS, Syracuse
University, 1955.
- J. Roman Andrus** Professor of Art and Education (1943)
B.S., M.S., Brigham Young University, 1942, 1943; Ed.D., University of Colorado,
1958; Art Students League, L.A. Art Institute.
- Gerald M. Armstrong** Assistant Professor of Mathematics (1970)
B.S., M.S., Brigham Young University, 1963, 1965; Ph.D., University of Wisconsin,
1970.
- Marilyn Arnold** Assistant Professor of English (1969)
B.A., M.A., Brigham Young University, 1957, 1958; Ph.D., University of Wisconsin,
1968.
- Carlos E. Asay** Professor of Education (1969)
B.S., University of Utah, 1953; M.A., Long Beach State College, 1958; Ed.D.,
University of Utah, 1967.
- Clarence D. Ashton** Associate Professor of Horticulture (1951)
B.S., Brigham Young University, 1929.
- Peter P. Ashworth** Assistant Professor of Spanish (1967)
B.A., Brigham Young University, 1961; Ph.D., University of Oklahoma, 1967.
- Milton V. Backman, Jr.** Professor of Church History and Doctrine (1960)
B.S., M.A., University of Utah, 1954, 1955; Ph.D., University of Pennsylvania, 1959.
- James Logan Baer** Assistant Professor of Geology (1969)
B.S., Ohio State University, 1957; M.S., Ph.D., Brigham Young University, 1962,
1968.
- J. Hugh Baird** Professor of Secondary Education (1963)
B.S., M.S., University of Utah, 1954, 1954; Ed.D., University of California at
Berkeley, 1962.
- Joseph O. Baker** Assistant Professor of German (1967)
B.A., University of Utah, 1964; Ph.D., Tulane University, 1968.
- Ariel S. Ballif** Professor of Sociology; Foreign-Student Adviser (1938)
B.S., Brigham Young University, 1925; M.A., Ph.D., University of Southern California,
1937, 1945.
- Jae R. Ballif** Professor of Physics (1962)
B.S., Brigham Young University, 1953; M.A., Ph.D., University of California at
Los Angeles, 1961, 1962.
- Blauer L. Bangertner** Professor of Physical Education (1953)
B.A., Brigham Young University, 1951; M.S., Ph.D., University of Utah, 1955, 1964.
- Dee H. Barker** Professor of Chemical Engineering (1959)
B.S., Ph.D., University of Utah, 1948, 1951; Registered Professional Engineer, Utah,
1963.
- Clifford R. Barnes** Associate Professor of Music (1968)
B.Mus., M.A., Ph.D., University of Southern California, 1953, 1957, 1965.
- Howard W. Barnes** Associate Professor of Business Management (1968)
A.B., Harvard College, 1955; MBA, University of Southern California, 1963; Ph.D.,
Technische Universität Braunschweig, 1968.

- J. Dean Barnett** Professor of Physics (1958)
B.A., Ph.D., University of Utah, 1954, 1959.
- Ralph Dale Barney** Associate Professor of Communications (1971)
B.S., Brigham Young University, 1957; M.A., University of Iowa, 1960; Ph.D., University of Missouri, 1971.
- Howard H. Barron** Professor of Church History and Doctrine (1953)
B.S., M.S., Utah State University, 1943, 1950; Ed.D., University of Utah, 1953.
- George S. Barrus** Associate Professor of Communications (1967)
B.S., University of Utah, 1950; M.A., Brigham Young University, 1964; Ph.D., University of Iowa, 1970.
- Cliff S. Barton** Professor of Civil Engineering; Assistant Dean,
College of Physical and Engineering Sciences (1959)
B.S., Utah State University, 1947; M.S., Ph.D., Rensselaer Polytechnic Institute, 1953, 1959.
- James R. Barton** Professor of Civil Engineering (1967)
B.S., University of New Mexico, 1944; M.S., University of Colorado, 1946; Ph.D., Colorado State University, 1958; Registered Engineer, Utah, 1949.
- J. LaVar Bateman** Professor of Speech (1949)
B.A., Brigham Young University, 1941; M.S., Ph.D., University of Wisconsin, 1947, 1950.
- Merrill J. Bateman** Professor of Economics (1967)
B.S., University of Utah, 1960; Ph.D., Massachusetts Institute of Technology, 1965.
- Edith Bartholomew Bauer** Professor of Educational Psychology (1945)
B.A., M.A., Brigham Young University, 1930, 1946; Ph.D., University of California at Berkeley, 1956.
- Jay V. Beck** Professor of Microbiology (1951)
B.A., M.A., Brigham Young University, 1933, 1936; Ph.D., University of California at Berkeley, 1940.
- Raymond E. Beckham** Associate Professor of Communications (1949)
B.S., M.A., Brigham Young University, 1949, 1969.
- R. DerMont Bell** Professor of Business Education (1957)
B.S., M.S., Brigham Young University, 1955, 1956; Ph.D., University of Southern California, 1960.
- Parley L. Belnap** Assistant Professor of Music (1965)
B.A., M.A., Brigham Young University, 1950, 1956; Premier Prix, Royal Flemish Conservatory, Belgium, 1960; Diplome Supérieur, Royal Flemish Conservatory, Belgium, 1964.
- W. Dwayne Belt** Professor of Secondary Education (1961)
B.A., Brigham Young University, 1952; M.A., Ed.D., Colorado State College, 1958, 1961.
- Marion Bennion** Professor of Food Science and Nutrition (1952)
B.S., Utah State University, 1947; M.S., Teachers College, Columbia University, 1949; Ph.D., University of Wisconsin, 1956.
- Robert C. Bennion** Associate Professor of Psychology (1961)
B.A., Brigham Young University, 1956; M.A., Ph.D., Ohio State University, 1959, 1961.
- Dale L. Berge** Assistant Professor of Anthropology
and Archaeology (1967)
B.S., M.A., Brigham Young University, 1961, 1964; M.A., Ph.D., University of Arizona, 1967, 1968.
- LaMar C. Berrett** Professor of Church History and Doctrine (1963)
B.S., University of Utah, 1952; M.S., Ed.D., Brigham Young University, 1960, 1963.
- Paul O. Berrett** Professor of Electrical Engineering (1964)
B.S., University of Utah, 1953; M.S., University of Southern California, 1955; Ph.D., University of Utah, 1965.
- William E. Berrett** Professor of Church History and Doctrine (1948)
B.A., LL.B., LL.D., University of Utah, 1924, 1933, 1966; hon. LL.D., Brigham Young University, 1965.
- Max J. Berryessa** Professor of Elementary Education (1948)
B.S., M.S., Brigham Young University, 1948, 1949; Ed.D. Stanford University, 1959.
- Brian Stanley Best** Assistant Professor of English (1960)
B.S., M.A., Brigham Young University, 1958, 1962; Ph.D., University of Wisconsin, 1971.
- Myron G. Best** Associate Professor of Geology (1965)
B.S., University of Utah, 1957; Ph.D., University of California at Berkeley, 1961.
- Rollie Ray Bestor** Assistant Professor of Physical Education (1969)
B.S., M.S., University of Wisconsin, 1954, 1958; Ed.D., Brigham Young University, 1969.

- Gary Boyd Beus** Assistant Professor of Statistics (1967)
B.A., Brigham Young University, 1962; M.S., Virginia Polytechnic Institute, 1965.
- James L. Bills** Associate Professor of Chemistry (1962)
B.S., University of Utah, 1958; Ph.D., Massachusetts Institute of Technology, 1963.
- Ronald D. Bingham** Assistant Professor of Educational Psychology (1971)
B.A., Utah State University, 1961; M.Ed., Ph.D., Pennsylvania State University, 1965, 1970.
- Russell H. Bishop** Assistant Professor of Secondary Education (1966)
B.A., M.A., University of Utah, 1954, 1964; Ph.D., University of Oregon, 1966.
- Harold J. Bissell** Professor of Geology (1938)
B.S., Brigham Young University, 1934; M.S., Ph.D., University of Iowa, 1936, 1948.
- Harvey B. Black** Instructional Research Specialist; Professor of Educational Psychology (1970)
A.B., M.A., Brigham Young University, 1950, 1954; Ph.D., Indiana University, 1962.
- Angus U. Blackham** Professor of Chemistry (1952)
B.A., Brigham Young University, 1949; M.A., Ph.D., University of Cincinnati, 1950, 1952.
- Robert W. Blair** Associate Professor of Linguistics (1959)
B.A., M.A., Brigham Young University, 1955, 1957; Ph.D., Indiana University, 1964.
- Reed H. Blake** Assistant Professor of Sociology (1967)
B.S., M.S., Brigham Young University, 1957, 1959; Ph.D., Utah State University, 1969.
- Ronald Dale Bingham** Assistant Professor of Educational Psychology (1971)
B.S., Utah State University, 1961; M.Ed., Ph.D., Pennsylvania State University, 1965, 1970.
- Mae Blanch** Associate Professor of English (1958)
B.A., Brigham Young University, 1950; Ph.D., University of Colorado, 1966.
- Walter D. Bowen** Associate Professor of Church History and Doctrine (1964)
B.S., M.S., Ed.D., Brigham Young University, 1957, 1958, 1965.
- Lawrence S. Bowman** Associate Professor of Electrical Engineering (1967)
B.S., M.S., Ph.D., University of Utah, 1957, 1961, 1964.
- Reed H. Bradford** Professor of Sociology (1946)
B.A., Brigham Young University, 1937; M.A., Louisiana State University, 1939; M.A., Ph.D., Harvard University, 1941, 1946.
- Rulon L. Bradley** Professor of Communications (1965)
B.A., Brigham Young University, 1947; M.S., Ph.D., University of Utah, 1954, 1962.
- Jerald S. Bradshaw** Associate Professor of Chemistry (1966)
B.S., University of Utah, 1955; Ph.D., University of California at Los Angeles, 1963.
- Merrill Kay Bradshaw** Professor of Music (1957)
B.A., M.A., Brigham Young University, 1954, 1955; M.Mus., D.Mus.A., University of Illinois, 1956, 1962.
- Willard H. Bradshaw** Associate Professor of Microbiology (1961)
B.S., M.S., Brigham Young University, 1952, 1953; Ph.D., University of California at Berkeley, 1957.
- William S. Bradshaw** Assistant Professor of Zoology (1970)
B.A., Harvard University, 1961; Ph.D., University of Illinois, 1968.
- Marion B. Brady** Associate Professor of English (1965)
B.A., M.A., Brigham Young University, 1950, 1951; Ph.D., University of Utah, 1966.
- Lee Fred Braithwaite** Assistant Professor of Zoology (1962)
B.S., M.S., Ph.D., Brigham Young University, 1959, 1962, 1970.
- Ruth E. Brasher** Associate Professor of Home Economics Education (1969)
B.S., Brigham Young University, 1951; M.A., University of Maryland, 1959; Ph.D., Utah State University, 1969.
- Floyd E. Breinholt** Associate Professor of Art (1961)
B.S., M.E., Brigham Young University, 1937, 1953.
- Willis H. Brimhall** Professor of Geology (1956)
B.S., Brigham Young University, 1949; M.S., University of Arizona, 1961; B.S., Brigham Young University, 1960; Ph.D., Rice University, 1966.
- Ralph A. Britsch** Professor of Humanities and Comparative Literature (1938)
B.A., M.A., Brigham Young University, 1933, 1951.
- Ralph Lanier Britsch** Assistant Professor of History (1966)
B.A., M.A., Brigham Young University, 1963, 1964; Ph.D., Claremont Graduate School, 1967.

- Todd A. Britsch** Associate Professor of German and Humanities (1966)
B.A., Brigham Young University, 1962; M.A., Ph.D., Florida State University, 1965, 1966.
- H. Smith Broadbent** Professor of Chemistry (1946)
B.S., Brigham Young University, 1942; Ph.D., Iowa State University, 1946.
- Jack Devon Brotherson** Assistant Professor of Botany (1969)
B.S., M.S., Brigham Young University, 1964, 1967; Ph.D., Iowa State University, 1969.
- Bruce Leonard Brown** Assistant Professor of Psychology (1968)
B.S., M.S., Brigham Young University, 1965, 1968; Ph.D., McGill University, 1969.
- Thomas H. Brown** Professor of French (1959)
B.A., Brigham Young University, 1955; M.A., Ph.D., University of Illinois, 1957, 1960.
- Loren C. Bryner** Professor of Chemistry (1935)
B.S., M.S., Brigham Young University, 1928, 1930; Ph.D., Iowa State University, 1934.
- Eugene Taylor Buckner** Assistant Professor of Educational Psychology (1970)
B.S., M.S., Ph.D., Brigham Young University, 1954, 1962, 1970.
- Doyle W. Buckwalter** Associate Professor of Political Science (1964)
B.A., M.A., Brigham Young University, 1963, 1964; Ph.D., University of Michigan, 1968.
- Wallace Don Budge** Associate Professor of Civil Engineering (1964)
B.S., M.S., Utah State University, 1959, 1961; Ph.D., University of Colorado, 1964.
- Kenneth C. Bullock** Professor of Geology (1943)
B.S., M.A., Brigham Young University, 1940, 1942; Ph.D., University of Wisconsin, 1949.
- Gary L. Bunker** Associate Professor of Psychology (1969)
B.A., M.A., Brigham Young University, 1960, 1961; Ph.D., University of California at Berkeley, 1966.
- M. Dallas Burnett** Associate Professor of Communications (1958)
B.S., Brigham Young University, 1954; MSJ, Ph.D., Northwestern University, 1958, 1967.
- Wesley M. Burnside** Associate Professor of Art (1958)
B.S., M.S., Brigham Young University, 1941, 1949; Ph.D., Ohio State University, 1970.
- Wesley R. Burr** Assistant Professor of Child Development
and Family Relationships (1969)
B.S., M.S., Brigham Young University, 1960, 1961; Ph.D., University of Minnesota, 1967.
- Percy E. Burrup** Professor of Educational Administration (1952)
B.S., M.S., Utah State University, 1932, 1941; Ed.D., Colorado State College of Education, 1951.
- Alma P. Burton** Professor of Church History and Doctrine (1948)
B.S., Utah State University, 1948; M.S., Brigham Young University, 1950; Ed.D., University of Utah, 1957.
- Robert C. Burton** Professor of Mathematics (1964)
B.S., Brigham Young University, 1956; Ph.D., University of North Carolina, 1963.
- Sheril Dale Burton** Associate Professor of Microbiology (1967)
B.S., M.S., Brigham Young University, 1959, 1961; Ph.D., Oregon State University, 1964.
- Jess R. Bushman** Professor of Geology (1955)
B.A., Brigham Young University, 1949; Ph.D., Princeton University, 1959.
- Eliot A. Butler** Professor of Chemistry (1956)
B.S., Ph.D., California Institute of Technology, 1952, 1956.
- Owen William Cahoon** Associate Professor of Child Development
and Family Relationships (1970)
B.S., M.S., Utah State University, 1963, 1964; D.Ed., Pennsylvania State University, 1970.
- C. Boyd Call** Associate Professor of Physical Education (1960)
B.S., University of Utah, 1950; Physical Therapy Certificate from Children's Hospital in Los Angeles, 1953; M.S., Brigham Young University, 1963; Ph.D., University of Oregon, 1967.
- Duane Bowen Call** Assistant Professor of Computer Science (1971)
B.S., Brigham Young University, 1967; Ph.D., University of Utah, 1971.
- Ivan T. Call** Associate Professor of Business Management (1960)
B.S., Brigham Young University, 1958; MBA, Indiana University, 1959.
- James B. Cameron** Associate Professor of Accounting (1969)
B.S., University of Utah, 1956; MBA, University of California at Los Angeles, 1958; Ph.D., Montana State University, 1967.

- J. Elliot Cameron** Professor of Education; Dean of Students (1962)
B.S., M.S., Ed.D., Brigham Young University, 1949, 1949, 1967.
- Eugene E. Campbell** Professor of History (1956)
B.A., M.A., University of Utah, 1939, 1940; Ph.D., University of Southern California, 1952.
- John N. Cannon** Professor of Mechanical Engineering (1957)
BSME, M.S., University of Utah, 1952, 1955; Ph.D., Stanford University, 1965;
Registered Professional Engineer, Utah, 1958.
- Kenneth L. Cannon** Professor of Child Development and
Family Relationships (1956)
B.S., Brigham Young University, 1935; M.S., Ph.D., Iowa State College, 1948, 1954.
- Louis B. Cardon** Associate Professor of History (1960)
B.A., University of Arizona, 1950; M.A., Ph.D., University of California at
Berkeley, 1957, 1965.
- Gary Carlson** Professor of Computer Science;
Director of the Computer Research Center (1963)
B.A., M.A., Ph.D., University of California at Los Angeles, 1956, 1958, 1962.
- Melvin W. Carter** Professor of Statistics (1961)
B.S., Arizona State University, 1952; M.S., Ph.D., North Carolina State, 1954, 1956.
- Raymond Nielson Castle** Professor of Chemistry (1970)
B.S., University of Idaho, 1939; M.A., Ph.D., University of Colorado, 1941, 1944.
- Jonathan M. Chamberlain** Assistant Professor of Educational
Psychology; Counselor, Counseling Center (1971)
B.A., Brigham Young University, 1958; M.Ed., Ph.D., University of Wyoming, 1964,
1967.
- Arthur O. Chapman** Professor of Zoology (1959)
B.A., Brigham Young University, 1941; M.A., University of Kansas, 1949; Ph.D.,
University of Nebraska, 1953.
- A. Norton Chaston** Associate Professor of Electrical Engineering (1957)
B.S., University of Utah, 1951; M.S., Brigham Young University, 1963.
- Paul R. Cheesman** Professor of Ancient Scripture (1966)
B.A., San Diego State College, 1944; MRE, DRE, Brigham Young University, 1965,
1967.
- Dean C. Christensen** Professor of Educational Administration (1957)
B.S., M.S., Utah State University, 1938, 1948; Ed.D., University of Oregon, 1957.
- Earl M. Christensen** Professor of Botany (1949)
B.S., M.S., University of Utah, 1947, 1949; Ph.D., University of Wisconsin, 1954.
- Edward L. Christensen** Professor of Business Management (1953)
B.S., M.S., Ph.D., University of Utah, 1938, 1939, 1953.
- James J. Christensen** Professor of Chemical Engineering (1957)
B.S., M.S., University of Utah, 1953, 1956; Ph.D., Carnegie Institute of Technology,
1957.
- Ross T. Christensen** Professor of Archaeology and Anthropology (1952)
B.A., M.A., Brigham Young University, 1943, 1947; Ph.D., University of Arizona,
1956.
- Henry N. Christiansen** Professor of Civil Engineering (1965)
B.S., Utah State University, 1957; M.S., Ph.D., Stanford University, 1958, 1962.
- John R. Christiansen** Professor of Sociology (1957)
B.S., M.S., Utah State University, 1949, 1952; Ph.D., University of Wisconsin, 1955.
- Bruce B. Clark** Professor of English; Dean, College
of Humanities (1950)
B.A., University of Utah, 1943; M.A., Brigham Young University, 1948; Ph.D., Uni-
versity of Utah, 1951.
- Dwight P. Clark** Associate Professor of Chemical Engineering (1964)
B.S., University of Utah, 1960; Ph.D., Oregon State University, 1965.
- Harold Glen Clark** Professor of Education (1946)
B.S., Brigham Young University, 1928; M.S., University of Southern California, 1934;
Ed.D., George Washington University, 1942.
- H. Clifford Clark** Associate Professor of Elementary Education (1969)
B.S., Brigham Young University, 1954; M.A., Los Angeles State College, 1957;
Ed.D., Brigham Young University, 1963.
- Hoover W. Clark** Associate Professor of French (1964)
B.A., M.A., Brigham Young University, 1954, 1958; Ph.D., Syracuse University,
1964.
- J. Reuben Clark III** Professor of French and Classical Languages (1941)
B.A., University of Utah, 1934.

- James R. Clark** Professor of Ancient Scripture (1938)
B.A., M.A., Brigham Young University, 1936, 1944; Ed.D., Utah State University, 1958.
- Marden J. Clark** Professor of English (1949)
B.A., M.A., Brigham Young University, 1948, 1949; Ph.D., University of Washington, 1957.
- Wayne W. Clark** Professor of Economics (1962)
B.A., Brigham Young University, 1952; Ph.D., Texas A&M, 1960.
- A. John Clarke** Professor of Educational Administration (1938)
B.S., M.S., Brigham Young University, 1938, 1942; Ed.D., Colorado University, 1950.
- John C. Clegg** Professor of Electrical Engineering (1961)
B.S., M.S., Ph.D., University of Utah, 1949, 1954, 1957.
- Morris M. Clinger** Professor of Speech (1936)
B.A., M.A., Brigham Young University, 1932, 1946; Ph.D., University of Minnesota, 1963.
- Coran L. Cluff** Associate Professor of Chemistry (1960)
B.S., Arizona State University, 1952; M.S., Ph.D., University of Michigan, 1955, 1960.
- Ralph Lee Coates** Associate Professor of Chemical Engineering (1967)
B.S., Ph.D., University of Utah, 1959, 1962; Registered Professional Engineer, Utah, 1968.
- Lane A. Compton** Professor of Physical Science Education (1953)
B.S., M.S., Ed.D., University of Utah, 1943, 1951, 1955.
- Merlin D. Compton** Professor of Spanish (1964)
B.A., M.A., Brigham Young University, 1952, 1954; Ph.D., University of California at Los Angeles, 1959.
- Spencer J. Condie** Assistant Professor of Sociology (1969)
B.A., Brigham Young University, 1964; M.A., University of Utah, 1965; Ph.D., University of Pittsburgh, 1969.
- Leslie Muir Cooper** Professor of Psychology (1966)
B.S., M.S., Brigham Young University, 1954, 1955; Ph.D., University of Illinois, 1962.
- Ivan L. Corbridge** Professor of Agricultural Economics (1952)
B.A., Utah State University, 1946; M.S., University of Chicago, 1948; Ph.D., Washington State College, 1952.
- Milford C. Cottrell** Associate Professor of Secondary Education (1964)
B.A., University of Wyoming, 1948; M.S., Ed.D., Brigham Young University, 1956, 1961.
- Richard O. Cowan** Professor of Church History and Doctrine (1961)
B.A., Occidental College, 1958; M.A., Ph.D., Stanford University, 1959, 1961.
- Soren F. Cox** Associate Professor of English (1955)
B.A., M.A., Brigham Young University, 1952, 1956; Ph.D., University of Minnesota, 1964.
- Richard H. Cracroft** Assistant Professor of English (1963)
B.A., M.A., University of Utah, 1961, 1963; Ph.D., University of Wisconsin, 1970.
- Marshall R. Craig** Professor of English (1953)
B.S., Brigham Young University, 1941; M.A., Ph.D., Columbia University, 1947, 1968.
- Wesley W. Craig** Associate Professor of Sociology (1967)
B.A., Brigham Young University, 1956; Ph.D., Cornell University, 1967.
- John M. Crandall, Jr.** Associate Professor of Educational Psychology (1970)
B.A., M.A., Arizona State University, 1951, 1957; Ph.D., University of Texas, 1966.
- Earl C. Crockett** Professor of Economics (1957)
B.S., University of Utah, 1927; Ph.D., University of California, 1931.
- Bert P. Cundick** Associate Professor of Psychology (1962)
B.A., M.S., University of Utah, 1957, 1959; Ph.D., Ohio State University, 1962.
- Beverly R. Cutler** Associate Professor of Elementary Education (1969)
B.A., University of Utah, 1952; M.S., Brigham Young University, 1963; Ph.D., Stanford University, 1966.
- Delva Daines** Professor of Elementary Education (1955)
B.S., M.S., Utah State University, 1940, 1947; Ed.D., Washington State University, 1956.
- Robert H. Daines** Associate Professor of Business Management (1959)
B.S., Utah State University, 1956; MBA, Stanford University, 1959; DBA, Indiana University, 1966.
- Nelson Kent Dalley** Assistant Professor of Chemistry (1969)
B.S., M.A., Brigham Young University, 1960, 1964; Ph.D., University of Texas, 1968.
- David Johnson Dalton** Assistant Professor of Music (1963)
B.M., M.M., Eastman School of Music, 1959, 1961; DMA, Indiana University, 1970.

- Philip B. Daniels**..... Professor of Psychology (1961)
B.S., M.S., Brigham Young University, 1954, 1957; Ph.D., Harvard University, 1962.
- Alexander B. Darais**..... Associate Professor of Art (1954)
B.S., Brigham Young University, 1948; MFA, Claremont Graduate School, 1952.
- J. Kenneth Davies**..... Professor of Economics (1953)
B.S., Marquette University, 1945; M.S., Brigham Young University, 1950; Ph.D., University of Southern California, 1959.
- D. Evan Davis**..... Professor of Music (1964)
B.A., University of California at Los Angeles, 1946; M. Mus., Northwestern University, 1948; Ed.D., University of Oregon, 1953.
- Garold Neil Davis**..... Associate Professor of Germanic Languages (1968)
B.A., M.A., Brigham Young University, 1958, 1959; Ph.D., Johns Hopkins University, 1962.
- C. Edwin Dean**..... Associate Professor of Computer Science (1949)
B.S., M.S., Brigham Young University, 1947, 1952; M.S., University of Michigan, 1955.
- Daniel L. Decker**..... Professor of Physics (1958)
B.S., M.S., Brigham Young University, 1953, 1955; Ph.D., University of Illinois, 1958.
- Arturo De Hoyos**..... Associate Professor of Sociology (1968)
B.A., M.A., Brigham Young University, 1952, 1954; Ph.D., Michigan State University, 1961.
- Benjamin F. De Hoyos**..... Associate Professor of Recreation Education (1961)
B.S., M.A., Brigham Young University, 1956, 1961; Ph.D., University of Utah, 1969.
- William E. Dibble**..... Professor of Physics (1961)
B.S., Ph.D., California Institute of Technology, 1954, 1960.
- Dwight R. Dixon**..... Professor of Physics (1961)
B.S., Utah State University, 1942; Ph.D., University of California, 1955.
- Lucile L. Domigan**..... Associate Professor of Clothing and Textiles (1967)
B.S., Brigham Young University, 1940; M.S., Utah State University, 1956; Ph.D., Texas Woman's University, 1959.
- David M. Donaldson**..... Professor of Microbiology (1955)
B.S., M.S., Ph.D., University of Utah, 1950, 1952, 1954.
- G. Byron Done**..... Professor of Ancient Scripture (1956)
B.A., University of Utah, 1928; M.A., Ph.D., University of Southern California, 1937, 1939.
- Harold Lowe Dowdle**..... Professor of Spanish and Portuguese (1968)
B.A., M.A., Brigham Young University, 1948, 1949; Ph.D., Stanford University, 1954.
- Lester N. Downing**..... Professor of Educational Psychology (1954)
B.S., M.S., Utah State University, 1947, 1949; Ed.D., Colorado State College of Education, 1951.
- Roy W. Doxey**..... Professor of Scripture; Assistant Dean, College of Religious Instruction (1948)
B.A., M.A., George Washington University, 1938, 1940.
- Willard B. Doxey**..... Professor of Economics (1956)
B.S., M.S., University of Utah, 1937, 1947; Ph.D., University of California at Berkeley, 1956.
- J. Duane Dudley**..... Professor of Physics (1956)
B.S., Brigham Young University, 1952; M.A., Rice Institute, 1953; Ph.D., University of Utah, 1959.
- James T. Duke**..... Professor of Sociology (1963)
B.A., M.A., University of Utah, 1957, 1958; Ph.D., University of California at Los Angeles, 1963.
- James Webb Dunn**..... Assistant Professor of Elementary Education (1970)
B.S., M.S., Ed.D., Brigham Young University, 1950, 1960, 1968.
- S. Olani Durrant**..... Assistant Professor of Civil Engineering (1970)
BES, M.S., Brigham Young University, 1962, 1963; Sc.D., New Mexico State University, 1969; Registered Professional Engineer, Utah, 1971.
- Dean S Dutton**..... Associate Professor of Economics (1968)
B.A., University of Utah, 1964; M.A., Ph.D., Michigan State, 1966, 1968.
- William G. Dyer**..... Professor of Organizational Behavior (1955)
B.A., M.A., Brigham Young University, 1950, 1952; Ph.D., University of Wisconsin, 1955.
- Don L. Earl**..... Professor of Music (1946)
B.A., M.A., Brigham Young University, 1940, 1947; Ph.D., Indiana University, 1952.

- E. John Eastmond** Professor of Physics (1951)
B.A., Brigham Young University, 1937; Ph.D., University of California at Berkeley, 1943.
- Richard Grant Ellsworth** Associate Professor of English (1958)
B.A., M.A., Brigham Young University, 1951, 1952; Ph.D., University of Maryland, 1958.
- J Lynn England** Assistant Professor of Sociology (1970)
B.A., M.A., University of Utah, 1965, 1967; Ph.D., University of Pittsburgh, 1971.
- Glenn L. Enke** Professor of Civil Engineering (1962)
B.S., University of California, 1928; Registered Engineer, California, 1934, Utah, 1947, Ohio, 1964, Wyoming, 1965; Registered Land Surveyor, Utah, 1955.
- Ross S. Esplin** Assistant Professor of English (1964)
B.A., M.A., Brigham Young University, 1947, 1949; Ph.D., University of Utah, 1970.
- David L. Evans** Associate Professor of English (1954)
B.A., Idaho State College, 1948; M.A., Ph.D., University of Utah, 1953, 1968.
- William E. Evenson** Assistant Professor of Physics (1970)
B.S., Brigham Young University, 1965; Ph.D., Iowa State University, 1968.
- James L. Farmer** Assistant Professor of Zoology (1968)
B.S., California Institute of Technology, 1960; Ph.D., Brown University, 1966.
- Dean B. Farnsworth** Professor of English (1953)
B.A., M.A., University of Utah, 1946, 1947; Ph.D., University of California at Berkeley, 1950.
- Lee W. Farnsworth** Associate Professor of Political Science (1964)
B.A., M.A., University of California at Berkeley, 1957, 1960; Ph.D., Claremont Graduate School, 1963.
- Raymond B. Farnsworth** Professor of Agronomy (1946)
B.S., Brigham Young University, 1937; M.S., Massachusetts State College, 1938; Ph.D., Ohio State University, 1941.
- J. Earl Faulkner** Associate Professor of Statistics (1963)
B.S., Utah State University, 1950; M.S., Kansas State University, 1952; Ph.D., University of Minnesota, 1964.
- Lawrence Fearnley** Professor of Mathematics (1957)
B.S., London University, 1953; Ph.D., University of Utah, 1959; Ph.D. University of London, 1970.
- D. Allan Firmage** Professor of Civil Engineering (1955)
BSCE, University of Utah, 1940; M.S., Massachusetts Institute of Technology, 1941; Registered Engineer, Florida, 1948, Utah, 1956.
- A. Garth Fisher** Associate Professor of Physical Education (1969)
B.S., Brigham Young University, 1955; M.A., Sacramento State College, 1966; Ph.D., University of New Mexico, 1969.
- Royce P. Flandro** Associate Professor of Secondary Education (1953)
B.S., M.S., University of Utah, 1948, 1950; Ed.D., University of Indiana, 1957.
- Donovan E. Fleming** Professor of Psychology (1971)
B.S., M.S., Brigham Young University, 1956, 1957; Ph.D., Washington State University, 1962.
- Harvey J. Fletcher, Jr.** Professor of Mathematics (1953)
B.S., Massachusetts Institute of Technology, 1944; M.S., California Institute of Technology, 1948; Ph.D., University of Utah, 1954.
- Marvin H. Folsom** Professor of German (1961)
B.A., M.A., Brigham Young University, 1956, 1957; Ph.D., Cornell University, 1961.
- William E. Fort** Associate Professor of Religious Instruction (1968)
B.S., Georgia Institute of Technology, 1930; M.A., Ph.D., Duke University, 1932, 1934.
- Glen Ray Foster** Assistant Professor of Economics (1967)
B.S., Utah State University, 1963; Ph.D., University of Texas, 1970.
- William M. Foxley** Assistant Professor of Music (1969)
B.M., McCune School of Music, 1954; B.A., Brigham Young University, 1954; MFA, University of Utah, 1955; Ph.D., Brigham Young University, 1969.
- Rulon S. Francis** Assistant Professor of Physical Education (1963)
B.S., M.S., Brigham Young University, 1952, 1967; Ph.D., University of Utah, 1971.
- Joseph C. Free** Associate Professor of Mechanical Engineering (1961)
BES, Brigham Young University, 1958; M.S., California Institute of Technology, 1961; Ph.D., Massachusetts Institute of Technology, 1967.
- Herbert H. Frost** Professor of Zoology (1960)
B.A., M.A., Brigham Young University, 1941, 1947; Ph.D., Cornell University, 1955.
- Dean K. Fuhrman** Professor of Civil Engineering (1954)
B.S., M.S., Utah State University, 1941, 1950; Ph.D., University of Wisconsin, 1952; Registered Professional Engineer, Utah, 1947, Nevada, 1965.

- Darwin Fred Gale** Assistant Professor of Educational Psychology (1969)
A.S., Weber State College, 1957; B.S., M.S., Utah State University, 1958, 1960; Ed.D., Brigham Young University, 1967.
- Andrew L. Gardner** Professor of Physics (1964)
B.S., Utah State University, 1940; Ph.D., University of California at Berkeley, 1955.
- John H. Gardner** Professor of Physics (1949)
B.S., Utah State University, 1943; M.A., Ph.D., Harvard University, 1947, 1950.
- Robert Wayne Gardner** Associate Professor of Animal Science (1966)
B.S., Utah State University, 1958; M.S., Ph.D., Cornell University, 1960, 1962.
- Willard Hale Gardner** Associate Professor of Computer Science (1963)
B.S., Utah State University, 1948; M.S., Brigham Young University, 1956.
- Lynn E. Garner** Assistant Professor of Mathematics (1963)
B.S., Brigham Young University, 1962; M.A., University of Utah, 1964; Ph.D., University of Oregon, 1968.
- LaMar E. Garrard** Assistant Professor of Church History and Doctrine (1968)
B.S., University of Idaho, 1949; M.S., Ph.D., Brigham Young University, 1955, 1968.
- Ray H. Garrison** Associate Professor of Accounting (1966)
B.S., M.S., Brigham Young University, 1960, 1961; CPA, Colorado, 1962; DBA, Indiana University, 1966.
- Byron W. Gassman** Professor of English (1960)
B.A., Brigham Young University, 1955; M.A., Ph.D., University of Chicago, 1956, 1960.
- Edward A. Geary** Assistant Professor of English (1968)
B.A., M.A., Brigham Young University, 1960, 1963; Ph.D., Stanford University, 1971.
- Burton C. Gee** Associate Professor of Mathematics (1960)
B.S., Brigham Young University, 1951; M.S., Ed.D., Oregon State University, 1958, 1965.
- J. Douglas Gibb** Assistant Professor of Speech and Dramatic Arts (1969)
B.S., M.A., University of Utah, 1963, 1964; Ph.D., Wayne State University, 1966.
- Rendol L. Gibbons** Assistant Professor of Music (1954)
B.A., M.A., Northern Arizona University, 1947, 1954; Ph.D., University of Colorado, 1959.
- M. Carl Gibson** Professor of Spanish (1949)
B.A., M.A., Brigham Young University, 1947, 1949; Ph.D., University of Oregon, 1960.
- Gurcharan S. Gill** Associate Professor of Mathematics (1960)
B.S., Brigham Young University, 1958; M.S., Ph.D., University of Utah, 1960, 1965.
- Joseph M. Glassett** Associate Professor of Chemical Engineering (1966)
B.S., University of Utah, 1947; M.S., Massachusetts Institute of Technology, 1948; Registered Professional Engineer, 1956.
- Preston R. Gledhill** Professor of Dramatic Arts (1947)
Degré Supérieur, La Sorbonne, 1938; B.A., Brigham Young University, 1939; M.A., Louisiana State University, 1940; Ph.D., University of Wisconsin, 1951.
- J. Rex Goates** Professor of Chemistry (1947)
B.S., Brigham Young University, 1942; Ph.D., University of Wisconsin, 1947.
- A. Harold Goodman** Professor of Music (1960)
B.A., University of Arizona, 1947; M.Mus., Ed.D., University of Southern California, 1951, 1960.
- R. Irwin Goodman** Assistant Professor of Educational Psychology (1969)
B.A., University of California at Los Angeles, 1955; M.S., Ed.D., Indiana University, 1961, 1969.
- William Dale Goodson** Assistant Professor of Career Orientation (1965)
B.S., Ricks College, 1952; M.S., Ed.D., Brigham Young University, 1956, 1969.
- Brooke Grant** Assistant Professor of Accounting (1971)
B.A., J.D., Stanford University, 1958, 1960.
- Nan Osmond Grass** Associate Professor of English (1951)
B.A., Brigham Young University, 1930; M.A., Stanford University, 1954.
- John A. Green** Professor of French (1964)
B.A., M.A., Brigham Young University, 1954, 1955; Ph.D., University of Washington, 1960.
- Alan H. Grey** Associate Professor of Geography (1964)
B.A., Brigham Young University, 1959; M.A., Ph.D., University of Wisconsin, 1960, 1963.
- Jerry Dee Grover** Associate Professor of Industrial Education (1968)
B.S., M.S., Utah State University, 1956, 1961; Ed.D., Brigham Young University, 1968.
- Stewart L. Grow** Distinguished Professor of History and Political Science (1947)
B.S., M.S., Brigham Young University, 1935, 1948; Ph.D., University of Utah, 1954.

- Clark J. Gubler** Professor of Chemistry (1958)
B.A., Brigham Young University, 1939; M.A., Utah State University, 1941; Ph.D., University of California, 1945.
- Richard L. Gunn** Professor of Art Education (1948)
B.S., M.S., Brigham Young University, 1947, 1950; Ed.D., Stanford University, 1955.
- Brent Que Hafen** Associate Professor of Health Science (1969)
B.E., M.S., University of Utah, 1963, 1965; Ph.D., Southern Illinois University, 1969.
- William J. Hafen** Associate Professor of Recreation Education (1954)
B.S., Brigham Young University, 1950; M.A., State College of Washington, 1953; D.R., Indiana University, 1960; Ed.D., University of Utah, 1968.
- H. Tracy Hall** Distinguished Professor of Chemistry and Chemical Engineering (1955)
B.S., M.S., Ph.D., University of Utah, 1942, 1943, 1948.
- John R. Halliday** Professor of Music (1936)
B.A., M.A., Brigham Young University, 1935, 1936; Ph.D., Eastman School of Music, University of Rochester, 1941.
- W. Kenneth Hamblin** Professor of Geology (1963)
B.A., M.S., Brigham Young University, 1953, 1954; Ph.D., University of Michigan, 1958.
- Richard W. Hanks** Associate Professor of Chemical Engineering (1963)
B.E., Yale University, 1957; Ph.D., University of Utah, 1960; Registered Professional Engineer, Utah, 1968.
- Gary D. Hansen** Associate Professor of Family Economics and Home Management (1971)
B.S., Utah State University, 1958; M.A., University of Minnesota, 1960; Ph.D., Oregon State University, 1969.
- Harold I. Hansen** Professor of Dramatic Arts (1952)
B.S., Utah State University, 1937; M.A., Ph.D., State University of Iowa, 1940, 1949.
- H. Kimball Hansen** Associate Professor of Physics and Astronomy (1963)
B.S., M.S., Brigham Young University, 1957, 1959; Ph.D., University of California at Berkeley, 1966.
- Richard A. Hansen** Associate Professor of Mathematics (1967)
B.S., M.S., Ph.D., University of Utah, 1959, 1961, 1965.
- Terrence L. Hansen** Professor of Spanish; Director, Language Training Mission (1960)
B.A., University of Utah, 1946; M.A., Ph.D., Stanford University, 1948, 1950.
- Kenneth R. Hardy** Professor of Psychology (1954)
B.A., M.A., University of Utah, 1948, 1949; Ph.D., University of Michigan, 1954.
- LeRoy Francis Harlow** Associate Professor of Organization and Management (1967)
B.S., Iowa State University, 1938; M.A., University of Minnesota, 1942.
- Frank W. Harmon** Associate Professor of Elementary Education (1963)
B.S., M.S., University of Utah, 1952, 1956; Ed.D., Columbia University, 1964.
- Callis R. Harms** Associate Professor of Educational Administration (1960)
B.S., M.Ed., Brigham Young University, 1952, 1956; Ed.D., Arizona State University, 1961.
- Edwin O. Haroldsen** Associate Professor of Communications (1969)
B.S., M.S., University of Utah, 1943, 1956; Ph.D., Iowa State University, 1967.
- James M. Harris** Professor of Educational Psychology (1955)
B.S., M.S., Utah State University, 1952, 1953; Ph.D., Cornell University, 1955.
- James Roy Harris** Assistant Professor of Ancient Scripture (1966)
B.S., M.A., Ed.D., Brigham Young University, 1952, 1958, 1965.
- John B. Harris** Associate Professor of English (1958)
B.A., M.A., Brigham Young University, 1955, 1956; Ph.D., Wayne State University, 1965.
- John S. Harris** Assistant Professor of English (1962)
B.A., M.A., Brigham Young University, 1953, 1958.
- Bertrand F. Harrison** Professor of Botany (1929)
B.S., M.S., Brigham Young University, 1930, 1931; Ph.D., University of Chicago, 1937.
- B. Kent Harrison** Professor of Physics (1964)
B.S., Brigham Young University, 1955; M.A., Ph.D., Princeton University, 1958, 1959.
- Betty D. Harrison** Associate Professor of Educational Psychology (1961)
B.S., M.S., Ph.D., Brigham Young University, 1959, 1960, 1965.

- Grant Von Harrison** Assistant Professor of Educational Psychology (1967)
B.A., Brigham Young University, 1962; M.A., Adams State College, 1965; Ed.D., University of California at Los Angeles, 1969.
- Edward L. Hart** Professor of English (1952)
B.S., University of Utah, 1939; M.A., University of Michigan, 1941; Ph.D., Oxford University (England), 1950.
- Leon R. Hartshorn** Associate Professor of Church History and Doctrine (1965)
B.S., M.S., Brigham Young University, 1956, 1959; Ed.D., Stanford University, 1965.
- Milton F. Hartvigsen** Professor of Physical Education; Dean,
College of Physical Education (1956)
B.S., M.Ed., Utah State University, 1930, 1939; Ed.D., University of California at Los Angeles, 1956.
- Dorian Maurice Hatch** Assistant Professor of Physics (1968)
B.S., Utah State University, 1962; M.A., Ph.D., State University of New York at Stony Brook, 1965, 1968.
- Richard T. Hawkins** Professor of Chemistry (1959)
B.A., Brigham Young University, 1951; Ph.D., University of Illinois, 1959.
- Billy Ray Hays** Assistant Professor of Computer Science (1970)
B.S., East Texas State University, 1963; M.S., University of Iowa, 1967; Ph.D., Northwestern University, 1970.
- Richard Allyn Heaps** Assistant Professor of Educational Psychology;
Counselor in Counseling Center (1970)
B.S., Brigham Young University, 1966; M.A., Ph.D., University of Utah, 1968, 1970.
- Howard S. Heaton** Associate Professor of Mechanical Engineering (1963)
B.S., University of Southern California, 1957; M.S., Ph.D., Stanford University, 1959, 1963.
- Israel C. Heaton** Professor of Recreation Education (1956)
B.S., M.S., Utah State University, 1940, 1941; Re.D., University of Indiana, 1955.
- Steven Warner Heiner** Associate Professor of Health Science (1969)
B.S., M.S., Ed.D., University of Utah, 1955, 1962, 1969.
- Leland J. Hendrix** Assistant Professor of Educational Psychology (1967)
B.S., M.A., Ph.D., Brigham Young University, 1960, 1966, 1967.
- Richard Wilford Heninger** Professor of Zoology (1966)
B.S., Brigham Young University, 1957; M.S., Ph.D., Oklahoma State University, 1959, 1961.
- Wayne R. Herlin** Associate Professor of Guided Studies (1964)
B.A., University of Utah, 1953; M.A. Stanford University, 1956; Ph.D., University of Utah, 1963.
- Wilford M. Hess** Professor of Botany (1962)
B.S., Brigham Young University, 1957; M.S., Ph.D., Oregon State University, 1960, 1962.
- Jean-Pierre Heudier** Assistant Professor of French and Italian (1960)
B.A., Montana State University, 1957; M.A., Brigham Young University, 1960; Ph.D., University of Colorado, 1970.
- Martin B. Hickman** Professor of Political Science; Dean,
College of Social Sciences (1967)
B.S., M.A., Ph.D., University of Utah, 1951, 1952, 1954; MPA, Harvard University, 1960.
- Kenneth L. Higbee** Assistant Professor of Psychology (1970)
B.S., M.S., Brigham Young University, 1965, 1966; Ph.D., Purdue University, 1970.
- John C. Higgins** Associate Professor of Mathematics (1961)
B.A., M.A., Brigham Young University, 1958, 1960; Ph.D., University of California at Davis, 1966.
- Armin J. Hill** Professor of Physics; Dean, College of Physical
and Engineering Sciences (1957)
B.S., M.S., Montana State College, 1932, 1938; M.S., Ph.D., California Institute of Technology, 1949, 1950.
- John M. Hill** Assistant Professor of Food Science and Nutrition (1971)
B.A., Ph.D., Rice University, 1961, 1965.
- Marvin S. Hill** Assistant Professor of History (1968)
B.A., M.A., Brigham Young University, 1955; Ph.D., University of Chicago, 1968.
- Max W. Hill** Professor of Physics (1958)
B.A., Brigham Young University, 1954; Ph.D., University of California at Berkeley, 1959.
- Kenneth L. Hillam** Professor of Mathematics (1957)
B.S., M.S., University of Utah, 1949, 1956; Ph.D., University of Colorado, 1962.

- Ray C. Hillam** Professor of Political Science (1960)
B.A., University of Utah, 1955; M.A., George Washington University, 1958; Ph.D., American University, 1964.
- H. Gill Hilton** Associate Professor of Statistics (1962)
B.S., Brigham Young University, 1957; M.S., Ph.D., North Carolina State College, 1960, 1962.
- Edwin C. Hinckley** Professor of Industrial Education (1963)
B.S., M.S., Oregon State University, 1950, 1956; Ed.D., Colorado State College, 1963.
- Lehi F. Hintze** Professor of Geology (1955)
B.A., University of Utah, 1941; M.A., Ph.D., Columbia University, 1949, 1951.
- Leona Holbrook** Professor of Physical Education (1937)
B.S., University of Utah, 1929; M.A., Ed.D., Columbia University, 1935, 1950.
- Lyal E. Holder** Associate Professor of Secondary Education (1966)
B.S., Brigham Young University, 1951; M.A., Ed.D., Colorado State College, 1958, 1962.
- Keith H. Hoopes** Professor of Animal Science (1957)
B.S., Utah State University, 1957; DVM, State College of Washington, 1956.
- Margaret H. Hoopes** Assistant Professor of Child Development
and Family Relationships (1970)
B.S., Ricks College, 1953; M.S., Brigham Young University, 1962; Ph.D., University of Minnesota, 1969.
- A. Burt Horsley** Professor of Church History and Doctrine (1956)
B.A., M.A., Brigham Young University, 1945, 1954; Dd.P., Münster University, 1955; Ph.D., Westphalian Welhelms Universität, Münster, Germany, 1956.
- M. Duane Horton** Associate Professor of Chemical Engineering (1963)
B.S., Ph.D., University of Utah, 1957, 1961.
- William A. Hoskisson** Associate Professor of Microbiology (1957)
B.S., M.S., Utah State University, 1938, 1941; Ph.D., University of Illinois, 1944.
- Robert J. Howell** Professor of Psychology (1952)
B.A., M.A., Ph.D., University of Utah, 1948, 1949, 1951.
- Ernest D. Hubbard** Associate Professor of Accounting (1963)
B.S., Utah State University, 1952; MBA, University of Utah, 1959; DBA, University of Washington, 1968.
- Lloyd Eugene Hudman** Assistant Professor of Geography (1970)
B.S., University of Utah, 1964; M.S., Ph.D., Clark University, 1970.
- DeVerl S. Humpherys** Associate Professor of Electrical Engineering (1964)
B.S., Brigham Young University, 1955; M.S., University of Utah, 1957; Ph.D., University of Illinois, 1963.
- O. Glade Hunsaker** Assistant Professor of English (1964)
B.S., Utah State University, 1962; M.A., Brigham Young University, 1964; Ph.D., University of Illinois, 1970.
- Donald R. Hurley** Assistant Professor of Health Science (1971)
B.S., M.S., Brigham Young University, 1963, 1964; Ph.D., Southern Illinois University, 1971.
- Norman F. Hyatt** Associate Professor of Educational Administration (1970)
B.S., M.S., Brigham Young University, 1948, 1949; Ed.D., University of Oregon, 1964.
- Paul V. Hyer** Professor of History (1957)
B.A., Brigham Young University, 1951; M.A., Ph.D., University of California, 1953, 1960.
- Carlton A. Infanger** Associate Professor of Agricultural Economics (1965)
B.S., M.S., Ph.D., Montana State College, 1955, 1956, 1964.
- Reed M. Izatt** Professor of Chemistry (1956)
B.S., Utah State University, 1951; Ph.D., Pennsylvania State University, 1954.
- Richard H. Jackson** Assistant Professor of Geography (1969)
B.S., M.S., Brigham Young University, 1965, 1966; Ph.D., Clark University, 1970.
- Thomas Wendell Jackson** Assistant Professor of Spanish and
Portuguese (1968)
B.A., Brigham Young University, 1956; Ph.D., Ohio State University, 1968.
- Briant S. Jacobs** Professor of English (1946)
B.A., Brigham Young University, 1939; Ph.D., State University of Iowa, 1944.
- Cecil B. Jacobson** Professor of Civil Engineering (1970)
B.S., University of Utah, 1932; M.S., University of Illinois, 1941; Registered Engineer and Land Surveyor, Utah, 1936.
- M. Wells Jakeman** Professor of Archaeology and Anthropology (1946)
B.A., University of Utah, 1931; M.A., University of Southern California, 1932; Ph.D., University of California, 1938.

- Ronald D. Jamison** Associate Professor of Mathematics (1963)
B.S., Brigham Young University, 1957; Ph.D., University of Utah, 1965.
- Boyd O. Jarman** Associate Professor of Physical Education (1969)
B.S., Brigham Young University, 1954; M.S., Ed.D., University of Oregon, 1959, 1965.
- Donald Karl Jarvis** Assistant Professor of Germanic Languages (1970)
B.A., Brigham Young University, 1964; Ph.D., Ohio State University, 1970.
- August W. Jaussi** Associate Professor of Zoology (1962)
B.S., University of Idaho, 1953; M.S., Brigham Young University, 1955; Ph.D., Oklahoma State University, 1960.
- Clayne R. Jensen** Professor of Physical Education and Recreation
Education; Assistant Dean, College of Physical Education (1964)
B.S., M.S., University of Utah, 1952, 1956; PED, Indiana University, 1963.
- De Lamar Jensen** Professor of History (1957)
B.A., Brigham Young University, 1952; M.A., Ph.D., Columbia University, 1953.
1957.
- Gary L. Jensen** Associate Professor of Physics (1966)
B.S., Utah State University, 1958; M.S., Ph.D., University of Michigan, 1960, 1964.
- Larry C. Jensen** Associate Professor of Psychology (1965)
B.S., M.S., Brigham Young University, 1960, 1961; Ph.D., Michigan State University, 1966.
- Marcus M. Jensen** Associate Professor of Microbiology (1969)
B.S., M.S., Utah State University, 1952, 1954; Ph.D., University of California at Los Angeles, 1961.
- Vern H. Jensen** Professor of Educational Psychology; Director,
Counseling Center (1949)
B.S., M.S., Brigham Young University, 1948, 1950; Ed.D., University of Colorado, 1957.
- Ernest C. Jeppsen** Professor of Industrial Education; Dean, College of
Industrial and Technical Education (1959)
B.S., Utah State University, 1926; M.S., Colorado State University, 1938.
- Franz M. Johansen** Associate Professor of Art (1956)
B.A., M.A., Brigham Young University, 1955, 1960.
- Eldred A. Johnson** Professor of Accounting (1955)
B.A., M.A., Brigham Young University, 1949, 1950; CPA, State of California, 1952;
Ph.D., University of Utah, 1968.
- H. Thayne Johnson** Associate Professor of Library and
Information Sciences (1965)
B.A., M.A., Brigham Young University, 1950, 1952; M.S., University of Southern California, 1959.
- John Hal Johnson** Assistant Professor of Food Science and Nutrition (1969)
B.S., M.S., Brigham Young University, 1955, 1957; Ph.D., Ohio State University, 1963.
- LaVon C. Johnson** Associate Professor of Physical Education (1969)
B.A., Brigham Young University, 1957; M.A., Ph.D., University of Utah, 1959, 1967.
- Lynn E. Johnson** Assistant Professor of Psychology; Director of Educational
Information; Educational and Career Advisement Center (1961)
B.A., Brigham Young University, 1958; M.A., Ph.D., University of Utah, 1959,
1962.
- Richard W. Johnson** Assistant Professor of Educational Psychology (1970)
B.S., Utah State University, 1960; M.S., University of Wisconsin, 1964; Ph.D., Brigham Young University, 1968.
- Douglas E. Jones** Associate Professor of Physics (1964)
B.S., M.S., Ph.D., Brigham Young University, 1957, 1959, 1964.
- J. Richard Jones** Assistant Professor of Physical Education for Men (1961)
B.S., M.S., Brigham Young University, 1951, 1955; Ed.D., Colorado State College, 1967.
- Kenneth O. Jones** Assistant Professor of Speech and Dramatic Arts (1970)
B.A., University of Utah, 1967; M.S., Utah State University, 1968; Ph.D., University of Oklahoma, 1970.
- Jens J. Jonsson** Professor of Electrical Engineering (1953)
BSGE, BSEE, University of Utah, 1944, 1947; MSEE, Ph.D., Purdue University, 1948,
1951.
- Clive D. Jorgensen** Associate Professor of Zoology (1963)
B.S., M.S., Brigham Young University, 1954, 1957; Ph.D., Oregon State University, 1964.
- Eleanor Jorgensen** Associate Professor of Clothing and Textiles (1949)
B.S., Brigham Young University, 1946; M.S., Kansas State College, 1954; Ph.D., Texas Women's University, 1965.

- Kenneth W. Karren** Professor of Civil Engineering (1965)
B.S., M.S., University of Utah, 1953, 1961; Ph.D., Cornell University, 1965; Registered Engineer, Utah, 1959.
- Alan F. Keele** Assistant Professor of Germanic Languages (1971)
B.A., Brigham Young University, 1967; M.A., Ph.D., Princeton University, 1970, 1971.
- Joseph J. Keeler** Associate Professor of Music; University Organist (1935)
B.S., M.A., Brigham Young University, 1940, 1950.
- Hans-Wilhelm Kelling** Associate Professor of German (1962)
Abitur, Germany, 1952; B.A., Brigham Young University, 1958; M.A., Ph.D., Stanford University, 1960, 1967.
- Burton C. Kelly** Associate Professor of Educational Psychology;
Associate Director, Counseling Center (1962)
B.S., Idaho State College, 1952; M.S., Brigham Young University, 1955; Ph.D., University of Chicago, 1966.
- Edwin R. Kimball** Professor of Physical Education (1935)
B.S., Brigham Young University, 1926; M.S., University of Southern California, 1935; Ed.D., University of Oregon, 1955.
- Merl D. Kimball, Jr.** Assistant Professor of French and Italian (1969)
B.A., M.A., University of Utah, 1953, 1964; Ph.D., Brigham Young University, 1970.
- Arthur Henry King** Professor of English (1971)
B.A., M.A., Cambridge University, 1931, 1942; F.D., Lunn University (Sweden), 1941.
- Hattie M. Knight** Associate Professor of Library and
Information Sciences (1941)
B.S., Brigham Young University, 1941; B.S., University of Denver, 1943; M.S., George Peabody College for Teachers, 1951.
- Lennis M. Knighton** Professor of Accounting and Public
Administration (1971)
B.A., Brigham Young University, 1962; M.Acc., Michigan State University, 1964.
- Elmer M. Knowles** Professor of Child Development and Family
Relationships (1962)
B.S., M.S., Utah State University, 1949, 1950; Ph.D., Cornell University, 1952.
- Roland H. Koller II** Assistant Professor of Economics (1969)
B.S., University of Utah, 1962; M.A., Ph.D., University of Wisconsin, 1968, 1969.
- Phillip R. Kunz** Associate Professor of Sociology (1968)
B.S., M.S., Brigham Young University, 1961, 1962; Ph.D., University of Michigan, 1967.
- L. Gary Lambert** Assistant Professor of French (1969)
B.A., University of California at Berkeley, 1963; M.A., University of California at Santa Barbara, 1965; Ph.D., Rice University, 1969.
- Neal E. Lambert** Associate Professor of English (1966)
B.A., Ph.D., University of Utah, 1961, 1966.
- Jack Wayne Lamoreaux** Assistant Professor of Mathematics (1968)
B.S., Brigham Young University, 1960; M.S., Ph.D., University of Utah, 1962, 1967.
- Don H. Larsen** Professor of Microbiology (1952)
B.S., Brigham Young University, 1940; M.A., University of Nebraska, 1942; Ph.D., University of Utah, 1950.
- Kenneth M. Larsen** Associate Professor of Mathematics (1960)
B.A., University of Utah, 1950; M.A., Brigham Young University, 1956; Ph.D., University of California at Los Angeles, 1964.
- Vernon W. Larsen** Professor of Sociology (1952)
B.A., M.A., Brigham Young University, 1949, 1950; Ph.D., Cornell University, 1957.
- Wayne A. Larsen** Assistant Professor of Statistics (1971)
B.S., Brigham Young University, 1961; Ph.D., Virginia Polytechnic Institute, 1967.
- Clinton F. Larson** Professor of English (1947)
B.A., M.A., University of Utah, 1943, 1947; Ph.D., University of Denver, 1956.
- E. Gerald Larson** Associate Professor of Physics (1964)
B.S., M.S., Ph.D., Massachusetts Institute of Technology, 1957, 1959, 1964.
- W. Derby Laws** Professor of Agronomy (1960)
B.S., Brigham Young University, 1939; M.S., Utah State University, 1941; Ph.D., Ohio State University, 1944.
- Harold R. Laycock** Professor of Music (1949)
B.A., M.A., Brigham Young University, 1937, 1947; DMA, University of Southern California, 1961.
- Ralph G. Laycock** Professor of Music (1953)
B.A., Brigham Young University, 1941; M.S., Juilliard School of Music, N.Y.C., 1948; D.M.A., University of Southern California, 1970.

- Robert L. Layton** Professor of Geography (1954)
B.S., M.S., University of Utah, 1951, 1952; Ph.D., University of Syracuse, 1962.
- Harold W. Lee** Professor of French (1937)
B.A., M.A., Brigham Young University, 1938, 1940; Ph.D., Stanford University, 1946.
- John T. Longhurst** Assistant Professor of Music (1969)
D.M., University of Utah, 1964; M.M., University of Utah, 1966; DMA, University of Rochester, 1970.
- Ferril A. Losee** Professor of Electrical Engineering (1965)
B.S., University of Utah, 1953; M.S., University of Southern California, 1957.
- Gordon M. Low** Professor of Speech (1964)
B.A., M.S., University of Utah, 1949, 1950; Ph.D., University of Minnesota, 1955.
- Daniel H. Ludlow** Professor of Scripture (1955)
B.S., Utah State University, 1946; M.S., Indiana University, 1953; Ed.D., Columbia University, 1955.
- Melvin J. Luthy** Assistant Professor of English (1971)
B.S., Utah State University, 1962; Ph.D., Indiana University, 1967.
- Eldon G. Lytle** Assistant Professor of Linguistics (1968)
B.A., M.A., Brigham Young University, 1961, 1962; Ph.D., University of Illinois, 1971.
- LeRay L. McAllister** Associate Professor of Accounting (1963)
B.A., Brigham Young University, 1957; M.S., DBA, Arizona State University, 1960, 1971; CPA, Utah, 1962.
- Ross "J" McArthur** Professor of Industrial Education (1956)
B.S., M.S., Utah State University, 1949, 1953; Ed.D., University of Missouri, 1955.
- William E. McKell** Associate Professor of Industrial Education (1970)
B.S., Utah State University, 1948; M.E., Texas A&M, 1951; Ed.D., Utah State University, 1967.
- J. Glen McKellar** Assistant Professor of English (1964)
B.A., M.A., Brigham Young University, 1960, 1962; Ph.D., University of Colorado, 1967.
- John E. McKendrick** Associate Professor of English (1953)
B.A., M.A., University of Utah, 1942, 1949.
- Gary Frances McKinnon** Assistant Professor of Business Management (1969)
B.S., MBA, University of Utah, 1962, 1963; Ph.D., University of Texas, 1968.
- Delbert H. McNamara** Professor of Physics (1956)
B.S., Ph.D., University of California at Berkeley, 1947, 1950.
- Melvin P. Mabey** Professor of History and Political Science (1955)
B.S., M.A., Brigham Young University, 1947, 1953; D. Phil., Oxford University (England), 1955.
- Harold S. Madsen** Associate Professor of English (1970)
B.A., M.A., University of Utah, 1953, 1960; Ph.D., University of Colorado, 1965.
- Truman G. Madsen** Professor of Philosophy (1957)
B.S., M.S., University of Utah, 1951, 1952; A.M., Ph.D., Harvard University, 1957, 1960.
- Francis R. Magleby** Associate Professor of Art (1959)
B.S., M.S., Brigham Young University, 1950, 1951.
- Nolan F. Mangelson** Assistant Professor of Chemistry (1969)
B.S., Utah State University, 1961; M.S., Brigham Young University, 1963; Ph.D., University of California at Berkeley, 1967.
- John H. Mangum** Associate Professor of Chemistry (1963)
B.S., M.S., Brigham Young University, 1957, 1959; Ph.D., University of Washington, 1963.
- Robert P. Manookin** Assistant Professor of Music (1959)
B.A., Brigham Young University, 1955; M.Mus., University of Illinois, 1959; Ph.D., University of Utah, 1967.
- Maurice P. Marchant** Associate Professor of Library and Information Sciences (1969)
B.A., M.S., University of Utah, 1949, 1953; MLS, M.A., Ph.D., University of Michigan, 1966, 1968, 1970.
- H. Carleton Marlow** Associate Professor of History (1964)
B.S., M.S., Brigham Young University, 1958, 1959; Ph.D., University of Oklahoma, 1966.
- Grant W. Mason** Assistant Professor of Physics (1970)
B.A., Brigham Young University, 1961; Ph.D., University of Utah, 1969.

- James A. Mason** Professor of Music (1956)
B.A., M.A., Brigham Young University, 1955, 1957; Ed.D., Arizona State University, 1970.
- Ray T. Matheny** Associate Professor of Anthropology and Archaeology (1964)
B.A., M.A., Brigham Young University, 1960, 1962; Ph.D., University of Oregon, 1968.
- Conan E. Mathews** Professor of Art; Dean Emeritus of the College of Fine Arts and Communications (1956)
B.A., College of Idaho, 1936; MFA, University of Utah, 1950.
- Robert J. Matthews** Assistant Professor of Ancient Scripture (1971)
B.S., M.S., Ph.D., Brigham Young University, 1955, 1960, 1968.
- D. Eugene Mead** Associate Professor of Child Development and Family Relationships (1967)
B.A., University of Oregon, 1956; M.A., San Jose State College, 1963; Ed.D., University of Oregon, 1967.
- J. Keith Melville** Professor of Political Science (1957)
B.A., University of Utah, 1947; M.A., University of California, 1956; Ph.D., University of Utah, 1959.
- M. David Merrill** Associate Professor of Educational Psychology (1966)
B.A., Brigham Young University, 1961; M.A., Ph.D., University of Illinois, 1964.
- LaVere B. Merritt** Assistant Professor of Civil Engineering (1964)
B.S., M.S., University of Utah, 1963, 1965; Ph.D., University of Washington, 1970; Registered Engineer, Washington, 1970.
- Charles L. Metten** Associate Professor of Dramatic Arts (1962)
B.A., M.A., University of California at Los Angeles, 1951, 1952; Ph.D., State University of Iowa, 1960.
- Louis C. Midgley** Professor of Political Science (1963)
B.S., M.S., University of Utah, 1954, 1957; Ph.D., Brown University, 1964.
- Wade E. Miller** Associate Professor of Zoology (1971)
B.S., Brigham Young University, 1960; M.S., University of Arizona, 1963; Ph.D., University of California at Berkeley, 1968.
- Gayle F. Miner** Associate Professor of Electrical Engineering (1960)
B.S., M.S., University of Utah, 1959, 1960; Ph.D., University of California, 1969.
- Albert O. Mitchell** Professor of Dramatic Arts (1956)
B.S., M.S., University of Utah, 1933, 1935; Ph.D., University of Wisconsin, 1938.
- J. Weldon Moffitt** Professor of Psychology (1963)
B.S., Brigham Young University, 1949; M.S., University of Utah, 1950; Ph.D., University of Illinois, 1953.
- Darrel J. Monson** Associate Professor of Electrical Engineering; Director, Instructional Services (1956)
B.S., University of Utah, 1943; M.S., University of California at Berkeley, 1952.
- Harold K. Moon** Associate Professor of Spanish (1963)
B.A., M.A., Brigham Young University, 1957, 1959; Ph.D., Syracuse University, 1963.
- Blaine H. Moore** Assistant Professor of Elementary Education (1970)
B.S., M.Ed., Brigham Young University, 1955, 1960; Ed.D., Colorado State College, 1969.
- Glen Moore** Professor of Botany (1958)
B.S., Brigham Young University, 1949; Ph.D., University of Chicago, 1954.
- Hal G. Moore** Professor of Mathematics (1961)
B.S., M.S., University of Utah, 1952, 1957; Ph.D., University of California at Santa Barbara, 1967.
- Alonzo J. Morley** Professor of Speech (1928)
B.A., M.A., Brigham Young University, 1925, 1931; Ph.D., University of Iowa, 1935.
- Edwin B. Morrell** Associate Professor of Political Science (1961)
B.A., Brigham Young University, 1956; M.A., Ph.D., Harvard University, 1959, 1966.
- A. Reed Morrill** Professor of Educational Administration (1948)
B.S., M.S., Brigham Young University, 1928, 1937; Ed.D., University of Oregon, 1948.
- Kay Sherman Mortensen** Assistant Professor of Industrial Technology (1968)
B.S., M.S., Utah State University, 1962, 1963; Ph.D., University of Utah, 1967.
- Darrell L. Moses** Associate Professor of Educational Psychology (1959)
B.A., M.A., University of Utah, 1952, 1953; Ph.D., University of Southern California, 1960.
- J. Joel Moss** Professor of Child Development and Family Relationships (1961)
B.S., M.S., Brigham Young University, 1948, 1949; Ph.D., University of North Carolina, 1954.

- J. Richard Murdock** Professor of Botany (1952)
B.S., M.S., Brigham Young University, 1949, 1951; Ph.D., Washington State University, 1956.
- Joseph R. Murphy** Professor of Zoology (1960)
B.A., M.A., Brigham Young University, 1950, 1951, Ph.D., University of Nebraska, 1957.
- Ivan David Muse** Associate Professor of Secondary Education (1970)
B.S., Brigham Young University, 1955; M.Ed., University of Arizona, 1958; D.Ed., University of Utah, 1966.
- Merlin G. Myers** Associate Professor of Anthropology (1963)
B.A., Brigham Young University, 1951; Ph.D., University of Cambridge, 1963.
- Donald K. Nelson** Associate Professor of Library Science;
Director of Library (1961)
B.S., Utah State University, 1938; MBA, University of Denver, 1949.
- George E. Nelson, Jr.** Associate Professor of Business Education (1968)
B.S., M.S., University of Utah, 1965, 1966; Ed.D., Arizona State University, 1968.
- Glen T. Nelson** Professor of Economics (1954)
B.S., M.S., Utah State University, 1942, 1948; Ph.D., University of Illinois, 1950.
- H. Mark Nelson** Professor of Physics (1959)
B.S., M.S., Brigham Young University, 1953, 1954; Ph.D., Harvard University, 1960.
- K. LeRoi Nelson** Professor of Chemistry (1956)
B.S., Utah State University, 1948; Ph.D., Purdue University, 1952.
- Parley W. Newman** Professor of Speech (1966)
B.S., M.S., Utah State University, 1950, 1951; Ph.D., State University of Iowa, 1954.
- Hugh W. Nibley** Professor of Ancient Scripture (1946)
B.A., University of California at Los Angeles, 1934; Ph.D., University of California, 1938.
- Reid Nibley** Professor of Music (1969)
BFA, M.A., University of Utah, 1950, 1953; DMA, University of Michigan, 1964.
- Henry J. Nicholes** Professor of Zoology (1946)
B.A., Brigham Young University, 1935; Ph.D., University of Wisconsin, 1941.
- Howard C. Nielson** Professor of Statistics (1957)
B.S., University of Utah, 1947; M.S., University of Oregon, 1949; MBA, Ph.D., Stanford University, 1956, 1958.
- Dale LeRoy Nish** Assistant Professor of Industrial Education (1967)
B.S., M.S., Brigham Young University, 1957, 1958; Ed.D., Washington State University, 1967.
- Quentin R. Nordgren** Professor of Music (1955)
B.A., M.A., Brigham Young University, 1942, 1950; Ph.D., Indiana University, 1955.
- Theodore A. Norman** Assistant Professor of Computer Science (1970)
B.S., University of Utah, 1962; M.S., Ph.D., Washington State University, 1968, 1970.
- James A. North** Associate Professor of Microbiology (1965)
B.S., M.S., Brigham Young University, 1958, 1960; Ph.D., University of Utah, 1964.
- Monte S. Nyman** Assistant Professor of Ancient Scripture (1966)
B.S., M.S., Utah State University, 1952, 1958; Ed.D., Brigham Young University, 1965.
- Clinton L. Oaks** Professor of Business Management (1957)
B.A., Brigham Young University, 1948; MBA, Ph.D., Stanford University, 1950, 1955.
- Harold R. Oaks** Assistant Professor of Speech and Dramatic Arts (1970)
B.A., M.A., Brigham Young University, 1960, 1962; Ph.D., University of Minnesota, 1964.
- Burton K. Olsen** Assistant Professor of Recreation Education (1965)
B.S., M.S., Brigham Young University, 1963, 1964; Ph.D., University of Minnesota, 1969.
- John E. Ord** Associate Professor of Elementary Education (1957)
B.S., Utah State University, 1940; M.S., University of Utah, 1949; Ed.D., Stanford University, 1958.
- Leon Edwin Orme** Professor of Animal Science (1969)
B.S., Utah State University, 1953; M.S., University of Tennessee, 1955; Ph.D., Michigan State University, 1958.
- Bryce B. Orton** Professor of Accounting;
Assistant Dean, College of Business (1961)
B.S., Brigham Young University, 1951; MBA, University of Oregon, 1957; DBA, University of Washington, 1962.
- J. Bevan Ott** Professor of Chemistry (1960)
B.S., M.S., Brigham Young University, 1955, 1956; Ph.D., University of California, 1959.

- Glen F. Ovard** Professor of Educational Administration (1958)
B.S., M.S., Brigham Young University, 1949, 1954; Ed.D., Stanford University, 1958.
- Russell T. Pack** Associate Professor of Chemistry (1967)
B.S., Brigham Young University, 1962; Ph.D., University of Wisconsin, 1967.
- Thane J. Packer** Associate Professor of Youth Leadership and
Recreation Education (1959)
B.S., Utah State University, 1939; M.S., Brigham Young University, 1963.
- E. Paul Palmer** Associate Professor of Physics (1966)
B.A., Ph.D., University of Utah, 1952, 1956.
- Spencer J. Palmer** Professor of Church History and Doctrine (1962)
B.A., Brigham Young University, 1952; M.A., Ph.D., University of California at
Berkeley, 1959, 1964.
- Robert Lynn Park** Associate Professor of Animal Science (1965)
B.S., Brigham Young University, 1956; M.S., Ph.D., Cornell University, 1958, 1962.
- Robert J. Parsons** Assistant Professor of Economics (1970)
B.S., M.S., Brigham Young University, 1964, 1966; Ph.D., University of California
at Riverside, 1971.
- Robert C. Patch** Professor of Ancient Scripture (1959)
B.A., University of Mexico, 1945; M.Th., Ph.D., Brigham Young University, 1949,
1964.
- Edward G. Paul** Associate Professor of Chemistry (1964)
B.S., Ph.D., University of Utah, 1958, 1962.
- Ernest B. Paxson, Jr.** Associate Professor of Mechanical Engineering (1969)
B.A., B.S., Rice University, 1957, 1958; M.S., Ph.D., Stanford University, 1959, 1963.
- I. Reed Payne** Associate Professor of Psychology (1964)
B.S., Brigham Young University, 1956; M.S., Ph.D., Pennsylvania State University,
1958, 1963.
- Glenn L. Pearson** Associate Professor of Ancient Scripture (1951)
B.S., Utah State University, 1949; M.A., Brigham Young University, 1951.
- Darhl Max Pedersen** Professor of Psychology (1962)
B.S., M.S., Brigham Young University, 1957, 1958; Ph.D., University of Illinois, 1962.
- Devern Jay Perry** Associate Professor of Business Education (1963)
B.S., M.S., Brigham Young University, 1958, 1962; Ed.D., University of North Dakota,
1968.
- Betty J. Petersen** Associate Professor of Business Education (1963)
B.S., Utah State University, 1958; M.A., Ed.D., Columbia University, 1960, 1971.
- Melvin J. Petersen** Associate Professor of Church History
and Doctrine (1964)
B.S., M.S., Ed.D., Brigham Young University, 1948, 1955, 1964.
- Morris S. Petersen** Associate Professor of Geology (1966)
B.S., M.S., Brigham Young University, 1955, 1956; Ph.D., University of Iowa, 1962.
- Dean A. Peterson** Professor of Business Education; Administrative
Assistant to the President (1942)
B.S., Brigham Young University, 1938; M.S., Ed.D., University of Southern Cali-
fornia, 1942, 1959.
- Evan T. Peterson** Professor of Sociology (1959)
B.S., M.S., Brigham Young University, 1952, 1953; Ph.D., University of Michigan,
1959.
- H. Donl Peterson** Associate Professor of Ancient Scripture (1964)
B.S., M.Ed., Brigham Young University, 1954, 1960; Ed.D., Washington State
University, 1965.
- John M. Peterson** Associate Professor of Mathematics (1965)
B.S., M.S., Ed.D., Utah State University, 1961, 1964, 1965.
- W. Revell Phillips** Professor of Geology (1957)
B.S., M.S., Ph.D., University of Utah, 1950, 1951, 1954.
- Rex O. Pinegar** Associate Professor of Educational Psychology (1966)
B.S., Brigham Young University, 1958; M.A., San Francisco State College, 1962;
Ed.D., University of Southern California, 1966.
- James Kent Pinney** Associate Professor of Business Management (1967)
B.A., University of Utah, 1962; MBA, Indiana University, 1964.
- James H. Polve** Professor of Mechanical Engineering (1969)
B.S., University of Utah, 1948; M.S., Princeton University, 1951; Ph.D., University of
Arizona, 1966.
- Bill J. Pope** Professor of Chemical Engineering (1958)
B.S., University of Utah, 1947; M.S., Ph.D., University of Washington, 1948, 1959;
Registered Professional Engineer, Utah, 1956.

- Karl Theodore Pope** Assistant Professor of Dramatic Arts (1966)
B.A., M.A., Brigham Young University, 1962, 1964; Ph.D., Wayne State University, 1966.
- Blaine R. Porter** Professor of Child Development and Family Relationships; Dean, College of Family Living (1955)
B.S., M.A., Brigham Young University, 1947, 1949; Ph.D., Cornell University, 1952.
- Larry Cardon Porter** Assistant Professor of Church History and Doctrine (1970)
B.S., Utah State University, 1957; M.A., Ph.D., Brigham Young University, 1966, 1971.
- Jenniev J. Poulson** Professor of Family Economics and Home Management (1963)
B.S., Brigham Young University, 1933; M.S., Ph.D., Iowa State University, 1954, 1964.
- Alvin Harold Price** Associate Professor of Child Development and Family Relationships (1966)
B.S., Brigham Young University, 1960; M.A., Ph.D., University of Minnesota, 1963, 1966.
- B. Michael Pritchett** Assistant Professor of Economics (1969)
B.S., Brigham Young University, 1965; M.S., Ph.D., Purdue University, 1967, 1969.
- Louis H. Quackenbush** Assistant Professor of Spanish and Portuguese (1970)
B.A., M.A., Brigham Young University, 1965, 1967; Ph.D., University of Illinois, 1970.
- David M. Randall** Assistant Professor of Music (1970)
B.S., Brigham Young University, 1965; M.M., Indiana University, 1967; DMA, University of Iowa, 1970.
- Dennis F. Rasmussen** Assistant Professor of Philosophy (1970)
B.S., University of Utah, 1966; M.Ph., Ph.D., Yale University, 1968, 1970.
- Ellis T. Rasmussen** Professor of Old Testament Languages and Literature (1951)
B.S., M.A., Ph.D., Brigham Young University, 1942, 1951, 1967.
- Lynn A. Ravsten** Counselor in Counseling Center; Assistant Professor of Educational Psychology (1957)
B.S., Brigham Young University, 1953; M.A., Stanford University, 1956; Ph.D., University of Utah, 1966.
- Jesse W. Reeder** Professor of History and Political Science (1952)
B.S., M.S., Utah State University, 1934, 1937; Ph.D., Cornell University, 1952.
- Howard T. Reid** Professor of Personnel and Guidance (1953)
B.A., Brigham Young University, 1940; M.S., Ed.D., University of Southern California, 1947, 1949.
- Alvin C. Rencher** Assistant Professor of Statistics (1968)
B.S., M.A., Brigham Young University, 1959, 1962; Ph.D., Virginia Polytechnic Institute, 1968.
- Noel Beldon Reynolds** Assistant Professor of Philosophy (1970)
B.A., Brigham Young University, 1967; M.A., Ph.D., Harvard University, 1968, 1970.
- Ronald L. Rhodes** Assistant Professor of Health Science (1962)
B.S., Elmhurst College, 1957; M.S., Brigham Young University, 1962; Ph.D., Oregon State University, 1971.
- Owen S. Rich** Professor of Communications (Radio-Television) (1950)
B.S., Brigham Young University, 1950; M.A., University of Southern California, 1953; Ed.D., Pennsylvania State University, 1963.
- Russell R. Rich** Professor of Church History and Doctrine (1953)
B.S., Utah State University, 1936; M.A., Brigham Young University, 1949; Ed.D., University of Wyoming, 1955.
- Dale O. Richards** Professor of Statistics (1963)
B.S., Utah State University, 1950; M.S., Ph.D., Iowa State University, 1957, 1963.
- J. Morris Richards** Associate Professor of Communications (1965)
B.A., Arizona State College, 1929; M.A., University of Arizona, 1937.
- Dean Rickenbach** Associate Professor of Economics (1963)
B.S., Brigham Young University, 1954; M.S., Stanford University, 1957; Ph.D., Indiana University, 1963.
- Eldin Ricks** Assistant Professor of Ancient Scripture (1949)
B.S., Brigham Young University, 1941; M.A., University of California, 1949; Ph.D., Dropsie College, 1971.

- Chauncey C. Riddle** Professor of Philosophy;
Dean, the Graduate School (1952)
B.S., Brigham Young University, 1947; M.A., Ph.D., Columbia University, 1951, 1958.
- J. Keith Rigby** Professor of Geology (1953)
B.S., M.S., Brigham Young University, 1948, 1949; Ph.D., Columbia University, 1952.
- Burton W. Robinson** Professor of Clinical Psychology (1955)
B.S., M.S., Utah State University, 1951; Ph.D., Purdue University, 1954.
- Donald W. Robinson** Professor of Mathematics (1956)
B.S., M.A., University of Utah, 1948, 1952; Ph.D., Case Institute of Technology, 1956.
- Laren R. Robison** Professor of Agronomy and Horticulture (1971)
B.S., M.S., Brigham Young University, 1958, 1959; Ph.D., University of Minnesota, 1962.
- J. Keith Rogers** Assistant Professor of Recreation Education (1971)
B.S., M.Ed., Brigham Young University, 1959, 1963; Ph.D., Michigan State University, 1971.
- R. Max Rogers** Professor of German; Assistant Dean,
College of Humanities (1945)
B.A., M.A., Brigham Young University, 1940, 1942; Ph.D., Stanford University, 1951.
- Thomas F. Rogers** Associate Professor of Russian (1969)
B.A., University of Utah, 1955; M.A., Yale University, 1962; Ph.D., Georgetown University, 1968.
- Vern C. Rogers** Associate Professor of Physics (1969)
B.S., M.S., University of Utah, 1965; Ph.D., Massachusetts Institute of Technology, 1968.
- Norma Rohde** Associate Professor of Educational Psychology;
Counselor in Counseling Center (1965)
B.A., University of Utah, 1949; M.A., Columbia University, 1958; Ed.D., Brigham Young University, 1965.
- Boyd C. Rollins** Professor of Child Development and
Family Relationships (1963)
B.S., Utah State University, 1953; M.S., Brigham Young University, 1958; Ph.D., Cornell University, 1961.
- L. McKay Rollins** Assistant Professor of Health Science (1962)
B.S., M.S., Brigham Young University, 1961, 1962; Ph.D., University of Utah, 1971.
- Ralph L. Rollins** Professor of Civil Engineering (1956)
B.S., M.S., Utah State University, 1941, 1949; Ph.D., Iowa State University, 1954;
Registered Engineer, Utah, 1958, Nevada, 1967.
- Antone K. Romney** Distinguished Professor of Comparative Education;
Dean Emeritus, College of Education (1945)
B.S., M.S., Brigham Young University, 1933, 1934; Ed.D., Stanford University, 1947.
- Keith Leroy Roos** Assistant Professor of German (1968)
B.A., University of Utah, 1964; Ph.D., Rice University, 1968.
- Harold E. Rosen** Associate Professor of Spanish (1966)
B.A., M.A., Brigham Young University, 1954, 1959; Ph.D., University of Oregon, 1966.
- Elmo S. Roundy** Professor of Physical Education (1963)
B.S., M.Ed., Brigham Young University, 1953, 1956; Ed.D., University of California at Los Angeles, 1965.
- Samuel R. Rushforth** Assistant Professor of Botany and Range Science (1970)
B.S., Weber State College, 1966; M.S., Ph.D., Brigham Young University, 1968, 1970.
- Richard D. Sagers** Professor of Microbiology (1958)
B.S., M.S., Brigham Young University, 1954, 1955; Ph.D., University of Illinois, 1958.
- Clyde D. Sandgren** Vice-President and General Counsel; Professor of
Political Science (1954)
B.S., Brigham Young University, 1937; LL.B., J.D., St. John's University, 1939, 1968.
- Lawrence W. Sardoní** Professor of Music (1945)
B.A., M.A., Brigham Young University, 1935, 1946.
- Richard Schmutz** Associate Professor of History (1966)
B.A., San Fernando State College, 1960; Ph.D., University of Southern California, 1966.
- Lynn Scoresby** Assistant Professor of Child Development and
Family Relationships (1970)
B.S., M.A., Brigham Young University, 1965, 1966; Ph.D., University of Minnesota, 1969.
- John F. A. Seggar** Associate Professor of Sociology (1966)
B.S., Brigham Young University, 1962; M.A., Ph.D., University of Kentucky, 1964, 1968.

- Donald D. Shaw** Professor of Health Science (1959)
B.A., M.S., Brigham Young University, 1957, 1961; Ed.D., Oregon State University, 1965.
- Lyman Sidney Shreeve, Sr.** Associate Professor of Spanish
and Portuguese (1970)
B.A., M.A., Brigham Young University, 1949, 1950; Ph.D., Interamerican University, Mexico, 1970.
- R. Phil Shumway** Professor of Animal Science (1949)
B.S., Utah State University, 1947; M.S., University of Minnesota, 1949; Ph.D., Utah State University, 1959.
- R. Wayne Shute** Assistant Professor of Education; Coordinator of
Community Education, Division of Continuing Education (1960)
B.S., M.Ed., Brigham Young University, 1955, 1959; Ed.D., University of Southern California, 1964.
- Val Eugene Simmons** Assistant Professor of Industrial Technology (1960)
B.S., University of Utah, 1964; M.S., Brigham Young University, 1966; Ph.D., Utah State University, 1968.
- John M. Simonsen** Professor of Mechanical Engineering (1954)
BSME, University of Utah, 1950; MSME, Ph.D., Purdue University, 1952, 1955; Registered Professional Engineer, Utah, 1957.
- Ralph Vencil Skarda, Jr.** Associate Professor of Mathematics (1965)
B.A., Pomona College, 1961; M.S., Ph.D., California Institute of Technology, 1964, 1965.
- Karl M. Skousen** Professor of Accounting (1958)
B.S., M.S., Brigham Young University, 1944, 1957; CPA, Utah, 1957; Ph.D., Michigan State University, 1962.
- K. Fred Skousen** Associate Professor of Accounting (1970)
B.S., Brigham Young University, 1965; MAS, Ph.D., University of Illinois, 1966, 1968; CPA, Utah, 1968.
- Robert H. Slover** Associate Professor of Political Science (1965)
B.A., University of Oklahoma, 1935; M.A., Ph.D., Harvard University, 1948, 1950.
- Gary Richard Smith** Associate Professor of Business Education (1969)
B.A., M.A., Idaho State University, 1954, 1959; Ed.D., University of Idaho, 1969.
- Harold T. Smith** Assistant Professor of Business Education (1963)
B.A., M.A., Colorado State College, 1958, 1959; Ed.D., Brigham Young University, 1967.
- Howard Duane Smith** Assistant Professor of Zoology (1969)
B.S., M.S., Brigham Young University, 1963, 1966; Ph.D., University of Illinois, 1969.
- Jay M. Smith** Professor of Accounting (1971)
B.S., M.S., Brigham Young University, 1953, 1960; CPA, 1953; Ph.D., Stanford University, 1965.
- Kay H. Smith** Professor of Psychology (1961)
B.A., M.A., Brigham Young University, 1957, 1958; Ph.D., Wayne State University, 1962.
- LaMont Wood Smith** Assistant Professor of Animal Science (1970)
B.S., Brigham Young University, 1960; M.S., University of Wisconsin, 1962; Ph.D., West Virginia University, 1970.
- Marvin A. Smith** Associate Professor of Chemistry (1966)
B.S., Utah State University, 1960; M.S., Ph.D., University of Wisconsin, 1962, 1966.
- Murray F. Smith** Associate Professor of German (1967)
B.A., University of Utah, 1956; M.S., Ph.D., University of Southern California, 1961, 1967.
- Oliver R. Smith** Professor of Communications (1938)
B.A., Brigham Young University, 1938; Ph.D., State University of Iowa, 1951.
- Ralph B. Smith** Professor of Educational Administration (1963)
B.S., Brigham Young University, 1943; M.A., University of Southern California, 1947; Ed.D., Brigham Young University, 1962.
- Robert J. Smith** Professor of Accounting; Associate Academic
Vice-President (1949)
B.S., Brigham Young University, 1948; MBA, Northwestern University, 1949; CPA, Illinois, 1949; CPA, Utah, 1950; DBA, Indiana University, 1957.
- Wilford E. Smith** Professor of Sociology (1948)
B.A., University of Utah, 1943; M.A., Brigham Young University, 1948; Ph.D., University of Washington, 1952.
- L. Douglas Smoot** Professor of Chemical Engineering (1967)
B.S., BES, Brigham Young University, 1957; M.S., Ph.D., University of Washington, 1958, 1960; Registered Professional Engineer, Utah, 1963.

- Donald Ray Snow** Associate Professor of Mathematics (1969)
B.A., BSME, University of Utah, 1959; MSME, M.S., Ph.D., Stanford University, 1960, 1962, 1965.
- G. Gardner Snow** Associate Professor of Educational Psychology (1969)
B.S., M.Ed., Brigham Young University, 1950, 1959; Ph.D., Michigan State University, 1969.
- Karl Nelson Snow, Jr.** Associate Professor of Political Science; Director, Institute of Government Service (1969)
B.S., Brigham Young University, 1956; M.A., University of Minnesota, 1958; MPA, University of Southern California, 1965.
- Richard L. Snow** Professor of Chemistry (1957)
B.S., Ph.D., University of Utah, 1953, 1957.
- A. Don Sorensen** Associate Professor of Political Science (1970)
B.S., Utah State University, 1960; M.A., Ph.D., University of Illinois, 1962, 1965.
- David M. Sorenson** Associate Professor of Psychology; Assistant Dean of Students for Health and Counseling (1969)
B.A., Brigham Young University, 1961; Ed.M., Ed.D., Harvard University, 1962, 1970.
- Irene Osmond Spears** Professor of Humanities and Comparative Literature (1936)
B.A., Brigham Young University, 1929; M.A., Ph.D., Stanford University, 1934, 1942.
- Walter H. Speidel** Professor of German (1963)
Abitur, Germany, 1940; State Examination, Germany, 1948; M.A., University of Utah, 1960; Ph.D., University of Kansas, 1963.
- Berkley A. Spencer** Associate Professor of Sociology (1969)
B.A., M.A., Brigham Young University, 1960, 1962; Ph.D., Cornell University, 1967.
- Robert W. Spencer** Associate Professor of Education; Dean, Admissions and Records (1970)
B.S., M.S., Utah State University, 1963, 1964.
- John Stephen Staley** Professor of Sociology (1969)
B.A., M.A., St. Vincent College, 1938, 1939; M.A., Catholic University of America, 1950; Ph.D., University of Pittsburgh, 1960.
- Melvin Joseph Stanford** Associate Professor of Business Management (1968)
B.S., Utah State University, 1957; MBA, Harvard University, 1963; Ph.D., University of Illinois, 1968.
- Eric G. Stephan** Associate Professor of Speech and Dramatic Arts (1968)
B.S., Ph.D., University of Utah, 1961, 1966.
- Dale Stevens** Assistant Professor of Geography (1969)
B.A., Brigham Young University, 1961; M.A., Indiana University, 1963; Ph.D., University of California at Los Angeles, 1969.
- David V. Stimpson** Associate Professor of Psychology (1964)
B.S., M.S., Brigham Young University, 1959, 1960; Ph.D., University of California at Berkeley, 1964.
- Dayna L. Stocks** Associate Professor of Botany (1964)
B.S., Utah State University, 1956; M.S., University of Utah, 1960; Ph.D., Utah State University, 1964.
- Ted D. Stoddard** Associate Professor of Business Education (1969)
B.S., M.S., Brigham Young University, 1962, 1963; Ed.D., Arizona State University, 1967.
- William J. Strong** Associate Professor of Physics (1967)
B.S., M.S., Brigham Young University, 1958, 1959; Ph.D., Massachusetts Institute of Technology, 1964.
- Robert E. Struthers** Associate Professor of Speech and Dramatic Arts (1953)
B.S., Utah State University, 1949; M.S., Brigham Young University, 1953; Ph.D., Ohio State University, 1971.
- Darrell W. Stubbs** Associate Professor of Music (1962)
B.Mus., Eastman School of Music, 1949; M.M., Indiana University, 1952; DMA, University of Southern California, 1966.
- Clifford N. Stutz** Professor of Civil Engineering (1969)
B.S., University of Utah, 1932; M.S., University of Illinois, 1933; Registered Engineer Illinois, 1935, Utah, 1949.
- Howard C. Stutz** Professor of Botany (1953)
B.S., M.S., Brigham Young University, 1940, 1951; Ph.D., University of California at Berkeley, 1956.
- Floyd Sucher** Associate Professor of Elementary Education (1964)
B.S., Brigham Young University, 1954; M.A., Los Angeles State College, 1957; Ed.D., Colorado State College, 1963.

- Albert D. Swensen** Professor of Chemistry (1947)
B.A., M.A., Brigham Young University, 1937, 1938; Ph.D., Louisiana State University, 1941.
- Russel B. Swensen** Professor of History (1933)
B.A., Brigham Young University, 1926; M.A., Ph.D., University of Chicago, 1931, 1934.
- Joseph N. Symons** Professor of Sociology (1953)
B.S., M.S., Utah State University, 1927, 1932; Ph.D., University of Chicago, 1944.
- Wilmer W. Tanner** Professor of Zoology (1949)
B.A., M.A., Brigham Young University, 1936, 1937; Ph.D., University of Kansas, 1949.
- Charles D. Tate, Jr.** Associate Professor of English (1960)
B.S., M.S., Utah State University, 1954, 1958; Ph.D., University of Colorado, 1966.
- Dale H. Taylor** Professor of Accounting (1963)
B.A., M.A., Brigham Young University, 1951, 1953; CPA, Illinois, 1955; Ph.D., Northwestern University, 1963.
- James S. Taylor** Associate Professor of Spanish (1962)
B.A., M.A., Brigham Young University, 1957, 1960; Ph.D., Ohio State University, 1967.
- Stanley A. Taylor** Associate Professor of Political Science (1968)
B.S., Brigham Young University, 1959; M.A., Ph.D., Fletcher School of Law and Diplomacy, 1961, 1968.
- Weldon J. Taylor** Professor of Marketing; Dean, College of Business (1937)
B.S., Brigham Young University, 1934; MBA, Harvard Graduate School of Business Administration, 1937; Ph.D., Graduate School of Business Administration, New York University, 1955.
- Glen Elwin Thomas** Assistant Professor of Educational Psychology (1968)
B.S., M.Ed., University of Idaho, 1954, 1957; Ed.D., Colorado State College, 1968.
- John A. Thomas** Associate Professor of English (1962)
B.A., M.A., Brigham Young University, 1953, 1954; Ph.D., University of Maryland, 1962.
- Robert K. Thomas** Professor of English; Academic Vice-President (1951)
B.A., Reed College, 1947; M.A., University of Oregon, 1949; Ph.D., Columbia University, 1967.
- Woodruff C. Thomson** Professor of English (1950)
B.A., M.A., Ph.D., University of Utah, 1938, 1949, 1962.
- Dennis Eugene Thorne** Assistant Professor of Psychology (1966)
B.S., Brigham Young University, 1962; M.A., Ph.D., University of Utah, 1965, 1966.
- James M. Thorne** Assistant Professor of Chemistry (1966)
B.S., Utah State University, 1961; Ph.D., University of California at Berkeley, 1966.
- Lucile Markham Thorne** Associate Professor of Library and Information Sciences (1950)
B.A., M.Ed., Ed.D., Brigham Young University, 1929, 1956, 1967; M.S., University of Southern California, 1958.
- Clark T. Thorstenson** Assistant Professor of Recreation Education (1969)
B.S., M.R.Ed., Brigham Young University, 1962, 1965; Ph.D., University of Utah, 1969.
- Alton L. Thygeson** Associate Professor of Health Science (1967)
B.S., M.H.Ed., Ed.D., Brigham Young University, 1962, 1965, 1969.
- William D. Tidwell** Associate Professor of Botany (1966)
B.S., M.S., Brigham Young University, 1954, 1963; Ph.D., Michigan State University, 1966.
- Frank M. Tippetts** Associate Professor of Art (1958)
B.A., M.A., Brigham Young University, 1953, 1962; Ed.D., Arizona State University, 1968.
- Vernon John Tipton** Professor of Zoology (1968)
B.S., M.S., Brigham Young University, 1948, 1949; Ph.D., University of California at Berkeley, 1959.
- Douglas F. Tobler** Assistant Professor of History (1967)
B.A., M.A., Brigham Young University, 1961, 1962; Ph.D., University of Kansas, 1967.
- F. LaMond Tullis** Associate Professor of Political Science (1969)
B.A., M.A., Brigham Young University, 1961, 1964; MPA, Ph.D., Harvard University, 1965, 1969.
- Glen H. Turner** Professor of Art (1947)
B.S., M.A., Brigham Young University, 1940, 1948.
- Norman C Turner** Associate Professor of French and Italian (1970)
B.A., M.A., Brigham Young University, 1957, 1958; Ph.D., Syracuse University, 1962.

- Rodney Turner** Professor of Church History and Doctrine (1956)
B.A., M.A., Brigham Young University, 1949, 1953; Ed.D., University of Southern California, 1960.
- L. Elliott Tuttle** Associate Professor of Geography (1936)
B.S., M.S., Brigham Young University, 1938, 1948.
- Richard D. Ulrich** Professor of Mechanical Engineering (1960)
B.S., M.S., Ph.D., Purdue University, 1954, 1955, 1959.
- John Franklin Vallentine** Professor of Range Science (1968)
B.S., Kansas State University, 1952; M.S., Utah State University, 1953; Ph.D., Texas A&M University, 1959.
- Barbara Jane Vance** Assistant Professor of Child Development and Family Relationships (1967)
B.A., University of Utah, 1956; M.A., Brigham Young University, 1959; Ph.D., Stanford University, 1967.
- Curtis N. Van Allen** Professor of Teacher Education; Assistant Dean, College of Education (1967)
B.S., M.S., Utah State University, 1957, 1959; Ed.D., University of Utah, 1967.
- Howard B. Vanfleet** Professor of Physics (1960)
B.S., Brigham Young University, 1955; Ph.D., University of Utah, 1961.
- Adrian Van Mondfrans** Associate Professor of Educational Psychology (1971)
B.S., M.A., University of Utah, 1963, 1964; Ph.D., University of Wisconsin, 1967.
- Leo P. Vernon** Professor of Chemistry; Research Director of Research Division (1954)
B.A., Brigham Young University, 1948; Ph.D., Iowa State University, 1951.
- Vern J. Wade** Assistant Professor of Elementary Education (1971)
B.S., Brigham Young University, 1962; M.A., Ed.D., University of Northern Colorado, 1969, 1971.
- LeRoy H. Walker** Assistant Professor of Mathematics (1968)
B.S., University of Utah, 1955; M.S., Massachusetts Institute of Technology, 1957; Ph.D., University of California at Los Angeles, 1968.
- Rudger H. Walker** Professor of Agronomy (1968)
B.S., Brigham Young University, 1923; M.S., Ph.D., Iowa State University, 1925, 1927.
- Max V. Wallentine** Professor of Animal Science (1962)
B.S., Utah State University, 1955; M.S., Ph.D., Cornell University, 1956, 1960.
- Charles Young Warner** Associate Professor of Mechanical Engineering (1966)
BES, M.S., Brigham Young University, 1957, 1963; Ph.D., University of Michigan, 1966; Registered Professional Engineer, Utah, 1967.
- C. Terry Warner** Associate Professor of Philosophy; Director, Honors Program (1967)
B.A., Brigham Young University, 1963; M.A., Ph.D., Yale University, 1965, 1967.
- S. ElVon Warner** Assistant Professor of Business Education (1961)
B.S., M.S., Brigham Young University, 1960; Ed.D., Arizona State University, 1968.
- Ted J. Warner** Associate Professor of History (1962)
B.S., M.S., Brigham Young University, 1955, 1958; Ph.D., University of New Mexico, 1964.
- W. Keith Warner** Professor of Sociology (1971)
B.S., M.S., Utah State University, 1958, 1959; Ph.D., Cornell University, 1960.
- F. DelMar Wasden** Assistant Professor of Elementary Education (1971)
B.S., M.Ed., Ed.D., Brigham Young University, 1961, 1966, 1971.
- Max L. Waters** Associate Professor of Business Education (1958)
B.A., M.Ed., Brigham Young University, 1958, 1960; Ed.D., Colorado State College, 1963.
- Jean Anne Waterstradt** Associate Professor of English (1945)
B.A., Brigham Young University, 1945; M.A., University of Southern California, 1955.
- Arthur R. Watkins** Professor of German (1952)
B.A., M.A., Brigham Young University, 1941, 1942; Ph.D., Stanford University, 1948.
- Ray Watters** Professor of Health Sciences and Physical Education (1957)
B.S., M.S., Utah State University, 1948, 1950; HSD, Indiana University, 1960.
- Stanley H. Watts** Associate Professor of Physical Education; Head Basketball Coach (1947)
B.S., Brigham Young University, 1938.
- Max D. Weaver** Professor of Art (1961)
B.S., M.A., Utah State University, 1939, 1955.

- Ross Maughan Weaver** Assistant Professor of Speech and Dramatic Arts (1959)
B.S., M.S., Utah State University, 1950, 1951; Ph.D., University of Oklahoma, 1969.
- Clark D. Webb** Assistant Professor of Secondary Education (1965)
B.A., M.Ed., Brigham Young University, 1962, 1965.
- Darrell Jack Weber** Associate Professor of Botany (1969)
B.S., M.S., University of Idaho, 1958, 1959; Ph.D., University of California at Davis, 1963.
- David G. Weight** Assistant Professor of Psychology (1969)
B.A., M.S., Brigham Young University, 1963, 1965; Ph.D., University of Washington, 1969.
- Stanley L. Welsh** Professor of Botany (1960)
B.S., M.S., Brigham Young University, 1951, 1957; Ph.D., Iowa State University, 1960.
- Dale H. West** Professor of English (1947)
B.A., Brigham Young University, 1940; M.A., University of Southern California, 1955; Ed.D., University of Colorado, 1962.
- Lorin F. Wheelwright** Professor of Music; Dean, College of Fine Arts and Communications (1967)
B.S., University of Utah, 1930; M.A., University of Chicago, 1931; Ph.D., Columbia University, 1938.
- Clayton M. White** Assistant Professor of Zoology (1970)
A.B., Ph.D., University of Utah, 1961, 1968.
- David Arnold White** Assistant Professor of Zoology (1966)
B.S., M.S., Brigham Young University, 1961, 1964; Ph.D., University of Wisconsin, 1967.
- Fred G. White** Associate Professor of Chemistry (1961)
B.S., M.S., Brigham Young University, 1952, 1956; Ph.D., University of California, 1961.
- Armand T. Whitehead** Assistant Professor of Zoology (1969)
B.S., Brigham Young University, 1965; Ph.D., University of California at Berkeley, 1969.
- Charles W. Whitman** Assistant Professor of Speech and Dramatic Arts (1963)
B.A., M.A., Brigham Young University, 1957, 1958; Ph.D., University of Minnesota, 1966.
- Leslie Whitton** Associate Professor of Botany (1962)
B.S., Utah State University, 1949; M.S., University of California at Davis, 1953; Ph.D., Cornell University, 1964.
- Harry E. Wickes** Associate Professor of Mathematics (1967)
B.S., M.Ed., Brigham Young University, 1950, 1954; M.Ed., Harvard University, 1962; Ed.D., Colorado State College, 1967.
- Marjorie Wight** Assistant Professor of English (1963)
B.A., Brigham Young University, 1943; M.A., University of California at Los Angeles, 1958; Ph.D., University of Southern California, 1967.
- Theodore A. Wight** Assistant Professor of Mathematics (1963)
B.S., M.S., Ed.D., University of Utah, 1955, 1963, 1968.
- Ray T. Wilcox** Associate Professor of Secondary Education (1957)
B.S., M.Ed., Brigham Young University, 1951, 1954; Ed.D., University of California at Berkeley, 1957.
- Doran F. Wilkes** Associate Professor of Civil Engineering (1967)
B.S., M.S., Utah State University, 1951, 1955; Ed.D., University of Missouri, 1966.
- Ernest L. Wilkinson** Professor of Political Science (1951)
B.A., Brigham Young University, 1921; J.D., George Washington University, 1926; S.J.D., Harvard University, 1927; LL.D., Brigham Young University, 1957.
- Milton G. Wille** Professor of Mechanical Engineering (1964)
B.A., B.S., Brigham Young University, 1957, 1957; MSME, California Institute of Technology, 1958; Ph.D., University of Michigan, 1964; Registered Professional Engineer, Utah, 1965.
- C. Frank Williams** Assistant Professor of Agronomy and Horticulture (1970)
B.S., M.S., Utah State University, 1967, 1968; Ph.D., Oregon State University, 1971.
- Glenn R. Williams** Associate Professor of Music (1965)
B.A., Brigham Young University, 1953; M.M., DMA, Eastman School of Music, 1954, 1961.
- Ray S. Williams** Assistant Professor of English (1966)
A.B., Coker College, 1960; M.A., Ph.D., Florida State University, 1962, 1965.
- Byron J. Wilson** Associate Professor of Chemistry (1965)
B.S., Idaho State College, 1955; M.A., Southern Illinois University, 1958; Ph.D., University of Washington, 1961.

- Marguerite I. Wilson** Associate Professor of Educational Psychology (1956)
B.S., University of Utah, 1948; M.A., San Francisco State College, 1955; Ed.D.,
George Peabody College for Teachers, 1965.
- Warren B. Wilson** Professor of Art and Education (1954)
B.S., Utah State University, 1943; MFA, State University of Iowa, 1949.
- Larry T. Wimmer** Associate Professor of Economics (1963)
B.S., Brigham Young University, 1960; M.A., Ph.D., University of Chicago, 1962, 1968.
- H. Geneva Winterrose** Associate Professor of Elementary Education (1967)
B.S., M.S., Brigham Young University, 1948, 1951; Ed.D., Utah State University, 1968.
- Edward J. Winward** Assistant Professor of Educational Psychology (1959)
B.S., M.S., Utah State University, 1959, 1960; Ph.D., University of Missouri, 1966.
- Harold F. Wolgramm** Associate Professor of Secondary Education (1966)
B.S., M.S., Ph.D., University of Utah, 1959, 1960, 1964.
- Heber G. Wolsey** Professor of Communications; Assistant to President
in Charge of Communications (1963)
B.S., Brigham Young University, 1942; M.A., Northwestern University, 1949; Ph.D.,
Michigan State University, 1967.
- Glena D. Wood** Professor of English (1952)
B.A., Brigham Young University, 1936; M.A., Ph.D., University of Kentucky, 1949,
1958.
- Joseph S. Wood** Assistant Professor of History (1967)
B.S., Ph.D., University of Utah, 1939, 1967.
- Lowell D. Wood** Assistant Professor of Economics (1969)
B.S., Brigham Young University, 1961; M.S., Montana State University, 1966; Ph.D.,
University of California at Berkeley, 1969.
- Stephen L. Wood** Professor of Zoology (1956)
B.S., M.S., Utah State University, 1946, 1948; Ph.D., University of Kansas, 1953.
- Lael J. Woodbury** Professor of Dramatic Arts (1954)
B.S., Utah State University, 1952; M.A., Brigham Young University, 1953; Ph.D.,
University of Illinois, 1954.
- Richard C. Woodbury** Associate Professor of Electrical
Engineering (1959)
B.S., University of Utah, 1956; M.S., Ph.D., Stanford University, 1958, 1965.
- Leon W. Woodfield** Associate Professor of Accounting (1960)
B.S., MBA, University of Utah, 1956, 1957; CPA, California, 1959, Utah, 1960;
DBA, Michigan State University, 1965.
- Hugh James Woodford** Assistant Professor of Physics (1968)
Diploma, Public Administration, University of Sidney, Australia, 1948; B.S., M.S.,
Brigham Young University, 1952, 1955; Ph.D., University of Utah, 1966.
- Ralph Woodward** Professor of Music (1955)
B.A., University of Idaho, 1937; M.M., Cincinnati Conservatory of Music, 1948;
DMA, University of Illinois, 1964.
- Earl M. Woolley** Assistant Professor of Chemistry (1970)
B.S., Ph.D., Brigham Young University, 1966, 1969.
- Richard R. Wootton** Assistant Professor of Educational Psychology (1963)
B.S., M.S., Ed.D., Brigham Young University, 1956, 1961, 1969.
- Donald N. Wright** Associate Professor of Microbiology (1969)
B.S., University of Utah, 1958; Ph.D., Iowa State University, 1964.
- H. Curtis Wright** Associate Professor of Library and Information
Sciences (1969)
B.A., M.A., Brigham Young University, 1954, 1955; M.A., University of Southern
California, 1959; M.S., Ph.D., Case Western Reserve University, 1968, 1969.
- David H. Yarn, Jr.** Professor of Philosophy (1950)
B.A., Brigham Young University, 1946; M.A., Ed.D., Columbia University, 1949,
1958.
- Paul H. Yearout** Professor of Mathematics (1962)
B.A., Reed College, 1949; M.S., Ph.D., University of Washington, 1958, 1961.
- James Robert Young** Assistant Professor of Elementary Education (1971)
B.A., M.Ed., Brigham Young University, 1965, 1966; Ph.D., George Peabody College,
1970.
- Ruth Wilson Young** Assistant Professor of Education (1970)
B.S., Brigham Young University, 1945; M.E., Colorado State College, 1949; Ed.D.,
Brigham Young University, 1970.

On authorization by the Graduate Council the service of members of the graduate faculty will be supplemented by that of other members of the University faculty whose advanced training and effective academic work in highly specialized fields qualify them for service in the graduate program.

General Information

History and Purpose

Brigham Young University was founded as an academy of The Church of Jesus Christ of Latter-day Saints in 1875. It became a university in 1903. The first graduate program began in 1916; the first master's degree was awarded in 1919. Some doctoral programs were inaugurated in 1957, with the first doctorates awarded in 1961.

The purpose of the Graduate School is to promote quality programs for academic and professional education as a means of meliorating the conditions of human life. Acute intellectual ability coupled with deep moral and spiritual commitment is seen as the ideal.

Organization

The Graduate Dean

The dean is responsible for leadership and administration of the entire Graduate School. The Office of the Graduate Dean has as its principal function the processing and maintenance of student records, while assuring high quality in individual student programs.

The Graduate Council

This council is composed of members elected from the graduate academic areas of the University and is presided over by the graduate dean. This body recommends policy for the Graduate School as a whole, processes all proposals for new degree programs, and conducts a continuous review of existing programs.

College Deans, Department Chairmen, and Graduate Coordinators

These individuals implement graduate programs under approved policies and serve a critical quality-control function relative to individual student programs.

The Graduate Faculty

Specially qualified members of the University faculty constitute the graduate faculty. Close professional and personal association of students with graduate faculty in learning, research, and teaching experiences helps provide students with the knowledge, skills, and judgment of a highly competent professional person.

Graduate Student Steering Committee

Student representatives from the graduate academic areas are members of this committee. They consult on procedures for upgrading the Graduate School and conduct schoolwide academic and social student functions.

Graduate Degrees

The Graduate School offers the master's degree in more than eighty-five fields distributed through fifty-three graduate departments and the doctor's degree in more than forty fields distributed through twenty-two graduate departments as follows:

Doctor of Philosophy	
Botany and Range Science	Marriage and Family Counseling
Botany	Educational Psychology
Chemistry	Counseling and Guidance
Analytical-Physical Chemistry	Educational Psychology
Biochemistry	Instructional Psychology (inter-departmental)
Inorganic Chemistry	Special Education
Organic Chemistry	Engineering
Physical Chemistry	Chemical Engineering Science
Child Development and Family Relationships	Civil Engineering Science
Child Development	Electrical Engineering Science
Family Relationships	Mechanical Engineering Science

- English
 - American Literature
 - English Literature
- French and Italian
 - French
- Geology
 - Economic Geology
 - Mineralogy, Geochemistry, and Petrology
 - Paleontology
 - Stratigraphy and Sedimentation
 - Structural and Field Geology
- Germanic Languages
 - German
- History
- Microbiology
- Music
- Physics and Astronomy
- Psychology
 - Clinical Psychology
 - Social Psychology
- Sociology
- Spanish and Portuguese
 - Spanish
- Speech and Dramatic Arts
 - Dramatic Arts
- Zoology
 - Entomology
 - Zoology
- Doctor of Education**
 - Educational Administration
 - Elementary School Administration
 - General School Administration
 - Junior College Administration
 - Secondary School Administration
 - Educational Psychology
 - Counseling and Guidance
 - Educational Psychology
 - Instructional Psychology (interdepartmental)
 - Special Education
 - Elementary Education
 - Curriculum and Instruction
 - Physical Education
 - Secondary Education and Foundations
 - Curriculum and Instruction
- Master of Arts**
 - Ancient Scripture
 - Anthropology and Archaeology
 - Archaeology
 - Art
 - Painting and Sculpture
 - Design
 - Asian Studies
 - Chemistry
 - Analytical-Physical Chemistry
 - Inorganic Chemistry
 - Organic Chemistry
 - Physical Chemistry
 - Church History and Doctrine
 - Classical, Biblical, and Middle Eastern Languages
 - Latin
 - Communications
 - Educational Administration
 - Educational Psychology
 - Counseling and Guidance
 - Educational Psychology
 - Instructional Media
 - Instructional Psychology (interdepartmental)
 - School Psychology (interdepartmental)
 - Special Education
 - Elementary Education
 - Curriculum and Instruction
 - Reading
 - English
 - American Literature
 - English Literature
 - English Language
 - French and Italian
 - French
 - Germanic Languages
 - German
 - History
 - Humanities and Comparative Literature
 - Comparative Literature
 - Latin American Studies
 - Linguistics
 - Music
 - Music Education
 - Musicology
 - Music Theory
 - Organizational Behavior
 - Physical Education
 - Physics and Astronomy
 - Political Science
 - American Political Systems, including Public Administration and Public Law
 - Comparative Political Systems
 - International Politics
 - Political Theory and Philosophy
 - Recreation Education
 - Secondary Education and Foundations
 - Curriculum and Instruction
 - International and Comparative Education
 - Spanish and Portuguese
 - Portuguese
 - Spanish
 - Speech and Dramatic Arts
 - Dramatic Arts
 - Interpretation
 - Speech
- Master of Science**
 - Agronomy and Horticulture
 - Agronomy
 - Animal Science
 - Botany and Range Science
 - Botany
 - Range Science
 - Business Education
 - Chemical Engineering Science
 - Chemistry
 - Analytical-Physical Chemistry
 - Biochemistry
 - Inorganic Chemistry
 - Organic Chemistry
 - Physical Chemistry
 - Child Development and Family Relationships
 - Child Development
 - Family Relationships
 - Civil Engineering Science
 - Economics
 - Electrical Engineering Science
 - Food Science and Nutrition
 - Geography
 - Geology
 - Economic Geology
 - Mineralogy, Geochemistry, and Petrology
 - Paleontology
 - Stratigraphy and Sedimentation
 - Structural and Field Geology
 - Health Science
 - Home Economics Education
 - Industrial Education
 - Mathematics
 - Mechanical Engineering Science
 - Microbiology
 - Physical Education
 - Physics and Astronomy
 - Psychology
 - General Psychology
 - School Psychology (interdepartmental)
 - Sociology
 - Speech and Dramatic Arts
 - Communicative Habilitation
 - Statistics
 - Zoology
 - Entomology
 - Zoology

Master of Accountancy
Accounting

Master of Business Administration
Business Management

Master of Communicative Habilitation
Speech and Dramatic Arts
Communicative Habilitation

Master of Education
Educational Administration
Educational Psychology
Counseling and Guidance
Educational Psychology
Instructional Media
Instructional Psychology (interdepartmental)
School Psychology (interdepartmental)
Elementary Education
Curriculum and Instruction
Reading
Secondary Education and Foundations
Curriculum and Instruction
International and Comparative Education

Master of Fine Arts
Art

Master of Engineering
Chemical Engineering Science
Civil Engineering Science
Electrical Engineering Science
Mechanical Engineering Science

***Master of Engineering Science**
Chemical Engineering Science
Civil Engineering Science
Electrical Engineering Science
Mechanical Engineering Science

Master of Health Education
Health Science

Master of Industrial Education
Industrial Education

Master of Library Science
Graduate Department of Library and Information Sciences

Master of Music
Music
Orchestral Instruments
Organ
Piano
Voice

Master of Public Administration
Institute of Government Service
Public Administration

Master of Recreation Education
Recreation Education
Community School Leadership
Recreation Education

Minors are offered in the fields listed above in addition to the following fields:

Agricultural Economics
Applied Music
Art History
Basic Chemistry
Business Management
Computer Science
Philosophy

*In cooperation with University of Utah and Utah State University.

***Certificate Programs**
Sixth-Year Specialist
Educational Administration
Educational Administration
Supervision
Educational Psychology
Counseling and Guidance
Special Education
Elementary Education
Curriculum and Instruction
Reading
Secondary Education and Foundations
Curriculum and Instruction

Teaching English As a Second Language (TESL)
English
French
German
Portuguese
Spanish

General Regulations

It is the responsibility of each student in the Graduate School to know and conform both to the following general regulations and to the additional requirements of his department. These general regulations may change from year to year. Students should consult the **Graduate School Catalog** each year to be aware of current regulations.

University Standards

The maintenance of high standards of honor, integrity, and morality; of graciousness in personal behavior; of Christian ideals in everyday living; and the complete abstinence from alcohol and tobacco are required of every student while on the campus, at home, or wherever he may be as long as he is in student status. Registration signifies a student's willingness to conform to these standards. A copy of the Code of Student Conduct is available from the dean of students, A-209 ASB.

Any pronouncement of disciplinary measures made by the President of the University becomes a part of these regulations. Violations of these regulations make the offender liable to suspension or expulsion from the University.

Admission

Students of any race, creed, color, or national origin are accepted for admission to Brigham Young University provided they maintain ideals and standards in harmony with those of The Church of Jesus Christ of Latter-day Saints and meet the University's academic requirements.

Applications for admission may be obtained from the University Office of Admissions by a written request to the University Mail Answering Service, 268 UPB. Be sure to specify whether you desire a degree-seeking or a nondegree application.

A grade-point average of 3.0 is the minimum acceptable for regular degree-seeking status. Students with undergraduate grade-point averages of less than 2.5 are not eligible for admission on either degree-seeking or non-degree status.

Admission to the Graduate School is contingent upon acceptance in a particular department and program as a degree-seeking student. To be considered, applications must include each of the following items and be filed before the announced deadlines.

1. Fully completed application form
2. Nonrefundable application fee of \$15
3. Two official transcripts of all college work
4. Three letters of recommendation on the forms provided
5. Confidential interview form
6. Letter of intent

Each applicant is notified in writing by the Graduate School concerning his admission or nonadmission. Application deadlines are as follows:

	Degree-seeking	Nondegree
Fall Semester 1972	June 30, 1972	July 15, 1972
Winter Semester 1973	November 15, 1972	December 10, 1972
Spring Term 1973	March 10, 1973	March 20, 1973
Summer Term 1973	May 15, 1973	May 30, 1973

Student Classification

Degree-seeking Status

1. **Regular.** Students who have met all prerequisites and are fully accepted by the academic department as ready to proceed with a regular graduate program in that department are placed on **regular** status.
2. **Provisional.** Students who lack prerequisites, language or tool preparation, or who have low grade-point records are placed on **provisional** status. Notice of provisions to be fulfilled is sent to the student with the acceptance form. Fulfillment of provisions as stipulated by the academic department automatically advances the student to regular status.

Nondegree Status

Registration of students with baccalaureate degrees on a nondegree basis is permitted for teacher certification and for taking classes of personal interest to the student. All auditors must be formally admitted and registered. Students of nondegree status must apply for admission through the University Office of Admissions.

Credit acquired at Brigham Young University while on a nondegree status or transfer credit from another accredited graduate school is not automatically a part of a degree program. Up to ten (10) semester hours of this credit may be included as part of a degree program if the student's advisory committee judges these hours to be part of a coherent program of study.

Continuous Registration

Details of the registration and records procedures are outlined in the class schedule issued each semester by the University Office of Admissions and Records.

When a student is admitted to a degree program, it is expected that he will work continuously and will register in that program until all requirements are completed. Normally a student will register each semester for a minimum of two semester hours of credit in work which is filed as part of his approved graduate program. Each student must, in any case, meet the following minimum requirements:

1. Complete at least six hours of approved program credit during each academic year (September 1 to September 1) or pay an equivalent service fee.
2. Register for at least two hours of approved program credit during any semester or term in which University personnel are consulted or facilities are used.

Graduate Credit for Seniors

If, during the last semester of the senior year, a candidate for a baccalaureate degree finds it possible to complete all requirements for such a degree with a registration of fewer than sixteen hours of undergraduate credit, he may register for graduate credit to the extent that the total registration shall not exceed sixteen hours during the semester. A form provided by the Office of the Graduate Dean stating that all baccalaureate requirements are being met during the current semester must be signed by the appropriate undergraduate dean and presented to the dean of the Graduate School at the time of such registration. Normally, students requesting such permission will have previously applied for admission to a graduate degree program. Any who have not done so are urged to complete the application during that semester.

Three-year master's degree programs have been approved in accounting, physics, chemistry, and engineering. Under these programs, the departments are authorized to make a special arrangement in which a limited amount of graduate work is taken before the final semester of the senior year.

Student Advisement

Every student accepted on a degree-seeking basis is assigned a sponsor (who is designated on the acceptance form). The student is expected to make immediate contact with his sponsor, stay in contact, and meet with the sponsor at least weekly during periods of regular enrollment. The sponsor's commission is to guide the student in his registration and individual study until such time as he is ready to proceed under the auspices of an advisory committee. This transition should take place during the first semester of registration.

The department chairman will appoint an advisory committee consisting of at least two persons for a master's committee and three for a doctoral committee. Minor fields must be represented by a member of the advisory committee. The advisory committee is to direct the student through those experiences which will enable him to satisfy all requirements and examinations pertinent to his degree program.

Student Programs

Immediately after the formation of the advisory committee and during the first semester of registration, the student should prepare and file his course outline, on the forms provided, in the Office of the Graduate Dean. This outline should reflect all prerequisites taken on provisional status, all tool subjects required, thesis credit, English 99 (when required), and all regular courses to be taken. This course outline must be completed under the direction of the advisory committee and signed by them.

As soon as possible after the formation of the advisory committee, the student should file an approved thesis, project, or dissertation prospectus with the Office of the Graduate Dean.

When there is a needed change in the student's program or committee, the change must be requested on official forms provided by the Office of the

Graduate Dean and be approved by the student's advisory committee and the department chairman or graduate coordinator. The forms must then be forwarded to the Office of the Graduate Dean.

Scholastic Standards

A grade-point average of 3.0 for all credit applying toward the degree is required of any student earning a degree in the Graduate School. No D credit can apply toward a graduate degree. A degree-seeking student (regular or provisional) whose cumulative grade-point average, while registered in the Graduate School, falls below 3.0 shall be placed on academic probation.

Submission of Theses and Dissertations

All theses and dissertations must be submitted to the dissertation secretary, D-227 ASB. Form No. 6, Departmental Tentative Approval of Theses or Dissertations, signed by the committee, must accompany the thesis or dissertation. This form is to be obtained from the student's major department. One extra signed copy of the abstract must be submitted (two copies if the student is majoring or minoring in education) at this time.

When the thesis or dissertation has been checked for format by the dissertation secretary, the student is issued Form No. 7, Submission of Theses and Dissertations, for the purpose of (1) accepting the thesis or dissertation as it is; (2) rejecting the thesis or dissertation, which would then necessitate a retyping—to be resubmitted prior to scheduling the oral examination; or (3) accepting the thesis or dissertation contingent upon the correction of minor format errors—to be made prior to submitting the thesis or dissertation to the library for binding. The required corrections will be listed on Form No. 7, along with any changes necessary as a result of the oral examination. This form, after being signed by the committee chairman, certifying that all required changes have been made, will serve as the binding permission slip.

The student will also be issued Form No. 8, Final Oral Examination Schedule, which should be properly filled out, signed, and returned to the Office of the Graduate Dean, D-208 ASB, where the candidate's records will be checked. If requirements are complete, Form No. 9, Committee Member's Evaluation of Final Oral Examination, and Form No. 10, Report of Committee Action on Final Oral Examination, will be issued to the candidate to be taken to the final oral examination.

Oral Examinations

Normally, two weeks must elapse between the time of the presentation of the thesis to the dissertation secretary and the date of the oral examination. The student may petition to have this time reduced for extenuating circumstances, but in no case may this period be less than one week.

Oral examinations will not be administered during any period in which the University is not in regular session.

Following the final oral examination, changes recommended in the thesis or dissertation, both by the dissertation secretary and the examining committee, must be made. The signatures on Form No. 7 of the committee chairman and the departmental graduate coordinator will certify the completion of these changes, and the original and three copies (four copies for students in the CDFR Department) of the thesis or dissertation must be submitted to the library for binding.

When the Graduate School receives the binding receipt from the library, graduation requirements are complete.

Graduation

A student who contemplates graduation should secure from the Office of the Graduate Dean an Application for Graduation form and pay the graduation fee of \$20 at the Treasurer's Office. This should be done not later than January 10 for April graduates and June 20 for August graduates, and before submitting the

thesis or dissertation to the Office of the Graduate Dean for approval as a basis for scheduling the final examination. A \$3 late fee will be charged if the graduation fee is paid after the above dates. Students who have made application for graduation and paid the graduation fee will be charged a \$2 reevaluation fee if they do not graduate in the commencement for which application is made.

All graduating students must attend the commencement and convocation exercises unless they have made satisfactory explanations of absence and have been officially excused under the authority of the President of the University. The request to be excused from the commencement and/or convocation exercises must be presented in writing to the dean of the Graduate School, D-208 Smoot Administration Building, at least two weeks prior to commencement. Extreme emergencies are the only exceptions to this requirement. Students not officially excused from these exercises will not be graduated until they are excused from or attend a later commencement.

Credits Certified by Special Examination

Under certain circumstances graduate students who are working in degree programs at BYU may have the need to have certain of their credits certified by special examination. It is the policy of the Graduate School that students must pay for these examinations. Payment must be made in advance in an amount equivalent to ordinary registration fees for the amount of credit concerned. This arrangement applies specifically to the following situations:

1. Graduate credit taken at Brigham Young University, or another accredited university in the United States, which has become outdated under the time limit regulations.
2. Graduate credit which a student desires to transfer from a non-accredited institution or from a foreign university whose academic standards are not known to the faculty at BYU.
3. Challenge of credit on the course outline for students who already have a good background in a required subject.

Applications for these special examinations can be obtained in the Office of the Graduate Dean.

Time Limits

Graduate credits are applicable toward a master's degree or certificate program only within a five-year period from the time they are received.

All academic credit applying toward the doctor's degree, exclusive of that earned in completion of the master's degree, must be completed within a period not to exceed eight years.

All requirements for a degree must be complete by the day of August commencement in the year in which time limits expire.

Student Load Limits

Normal load for a student who is not working is twelve units per semester or six units per term. The following boundary conditions apply:

	Work Load	Regular Semesters	Half-Semester Terms
Maximums	No work	16	8
	10 hours/week	12	6
	20 hours/week	10	5
	30 hours/week	8	4
	Full-time status	5	3
Minimums	Full-time status	5	5
	Teaching or research assistants	6	3
	Continuous registration	2	2

Graduate Awards

Further information concerning graduate awards is available through the Graduate Awards Office, D-227 ASB.

BYU Awards

Teaching and research experience are seen as integral and indispensable parts of graduate student programs. For this reason, graduate awards given by Brigham Young University are in the form of teaching and research assistantships and internships. These awards are administered through the academic departments of the Graduate School and vary according to the requirements and opportunities of the different disciplines. The most remunerative of these awards totals \$3,300 per academic year. Application for these awards should be made through the chairman of the academic department.

American Indian Awards

Special graduate awards are available for American Indian students. For further information, contact the Graduate Awards Office, D-227 ASB.

Student Loans and Financial Aids

Limited funds are available to help students remain in school when financial emergencies have arisen and personal or family resources are not available.

Short-Term Loans

Short-term loans are available for emergency assistance for tuition, books, fees, and other school expenses to full-time day students. These loans are made in small amounts for immediate requirements. Repayment is required within the current semester.

Church Student Loan Fund

The Church of Jesus Christ of Latter-day Saints makes aid available through a long-term loan program by which loans may be made to worthy full-time LDS students who are in critical financial need for tuition, books, fees, and other school expenses. Loans may be made each year in amounts usually not in excess of \$500 for graduate students. The student may be permitted to delay making repayment until after he discontinues his full-time status at BYU.

Application

Information regarding financial aids and application forms is available in the Office of Student Financial Aid, A-41 ASB.

Master's Degree

Amount and Distribution of Credit

The master's degree requires a minimum of thirty semester hours of credit. Of these thirty hours, at least twenty-one shall be earned in courses for which there is a systematic body of subject matter. Registration for individual reading, literature review, thesis research, or special problems may not be included in this total of twenty-one credit hours.

The master's thesis must carry a minimum of six hours. The thesis credit shall include such disciplines as review of the literature, all thesis research, and the writing of the thesis. Registration for thesis credit and work on the thesis must be concurrent.

A department, after authorization by the Graduate Council, may function under Option I and/or Option II.

Option I

At least fifteen semester hours, exclusive of thesis, must be in the major field and at least nine semester hours in a minor field approved by the major department. The minor department must approve the specific courses which constitute the minor.

Option II

Thirty hours must be in the major field or in direct support of the major field. Under this option at least twelve hours must be in the major field of course work.

A graduate student may have applied toward requirements for the master's degree a limited amount of credit earned by taking certain upper-division undergraduate courses which have been approved by the graduate advisory committee at the time of registration or appear on the course outline of a degree-seeking student. At least twenty hours of the credit for the master's degree must be in the 500 series or above and at least twenty hours must be taken on the Provo campus.

A minimum grade-point average of 3.0 is required in all work applying toward the degree.

Neither lower-division nor correspondence credit can be applied toward a graduate degree.

Transfer Credit

Graduate credit (only) acceptable to a student's advisory committee and not in excess of ten semester hours may be transferred from another accredited university upon the approval of the student's advisory committee and the Graduate Council. Forms for petitioning for such transfers are available in the Office of the Graduate Dean. All transferred credit must be of grade B or better. At least twenty semester hours toward the master's degree must be taken on the Provo campus in all programs except education and industrial education.

Certificate Programs

Please consult departmental descriptions for the requirements in certificate programs. The following programs are offered:

Junior College

Educational Administration

Sixth-Year Specialist

Educational Administration

Educational Administration

Supervision

Educational Psychology

Counseling and Guidance

Special Education

Elementary Education

Curriculum and Instruction

Reading

Secondary Education and Foundations

Curriculum and Instruction

Teaching English As a Second Language (TESL)

English

French

German

Portuguese

Spanish

Doctor of Education Degree

Admission Requirements

For admission to degree-seeking status as a doctoral applicant, the student must have completed twenty-two semester hours of education, or possess certification as a teacher, and must have completed two years of successful professional experience. Successful completion of a three-hour seminar is prerequisite to admission on regular status.

Classification of Doctoral Students

Students seeking the Doctor of Education degree are classified as **degree applicants** and **degree candidates**. The student becomes a doctoral applicant upon recommendation by his department chairman or graduate coordinator. The department will normally require an examination or other screening procedure prior to this recommendation. The student is admitted to candidacy after meeting conditions for admission to candidacy and before registering for the field project or dissertation and internship.

Residence Requirements

The equivalent of a minimum of three years of full-time study beyond the bachelor's degree is required. Full-time study is defined as nine to sixteen hours in course work or the equivalent in research per semester. The advisory committee has authority to decide what work will be accepted to meet these requirements. At least two consecutive semesters or two consecutive summers of work, during each of which a student is registered for not less than nine semester hours, must be taken on the Provo campus.

Tool Requirement

There is no foreign language requirement. The student must demonstrate proficiency in statistics to the satisfaction of the advisory committee.

Admission to Candidacy

To be eligible for advancement to candidacy, the student must satisfactorily pass the final qualifying written examination and submit a field project or dissertation prospectus approved by his doctoral advisory committee. The student has the responsibility for filing with the Office of the Graduate Dean Form No. 5, Request for Admission to Candidacy, when all conditions for candidacy have been met. Notice from the Office of the Graduate Dean then admits the student to candidacy for the degree. **Every doctoral student must have been certified for candidacy at least one full semester prior to graduation.**

Project or Dissertation

A minimum of twelve hours of dissertation or project credit must be attained. An oral examination on the student's project or dissertation must be completed successfully by each candidate.

Doctor of Philosophy Degree

Classification of Doctoral Students

Students admitted to the Doctor of Philosophy degree program are classified as **degree applicants** and **degree candidates**. The student becomes a doctoral

applicant upon recommendation by his department chairman or graduate coordinator. The department will normally require an examination or other screening procedure prior to this recommendation.

Residence Requirements

A full semester of residence credit is defined as from nine to sixteen hours in course work or the equivalent in research per semester. The advisory committee has authority to decide what work will be accepted to meet these requirements. Ordinarily two years of full-time course work or research or its equivalent are to be taken on the Provo campus. At least two consecutive semesters of work, during each of which a student is registered for not less than nine semester hours, must be taken on the Provo campus. These two semesters are in addition to any residence completed in a master's program.

Tool Requirement

For the academic areas in which a significant body of subject matter related to the pursuance of the Ph.D. degree is published in languages other than English, it is expected that doctoral candidates will include foreign languages as a necessary prerequisite to study in their respective fields. Where justified by the subject matter of the major area, however, a tool subject replacement for foreign language may be made.

In any case, the foreign language or the tool subject requirement should be considered a prerequisite to regular status as a degree-seeking student and is not to be considered as part of regular course work for accumulating credit hours in the major or minor fields of study.

Any of the four options below will satisfy the language-tool subject requirements. Departments specify which option or options are appropriate for their respective areas as approved by the Graduate Council.

Option I: Single-Language Requirement

The student shall be required to demonstrate a thorough familiarity with French, German, or Russian, or another foreign language that may be recommended by the department and authorized by the Graduate Council. Fulfillment of this requirement will be manifest through examination that will demonstrate (1) the candidate's ability to translate literature in the field of specialization with a competent level of speed and accuracy and (2) the candidate's ability to communicate orally in the language with acceptable facility. In lieu of a special examination that will demonstrate adequate use of the foreign language selected, this requirement can be met by the completion, with an average grade of B (3.0) or higher, of a minimum of twenty-two semester hours in the language. Students familiar with the language may be able to earn the first sixteen of the total twenty-two semester hours' credit by special examination, thereby qualifying them to register for the remainder of the credit from courses 321, 415, and 416, or their equivalent.

Option II: Two-Language Requirement

Any one or a combination of the following provisions meets the two-language requirement. One of the languages must be French, German, or Russian. The second language may be one recommended by the department and authorized by the Graduate Council.

1. Successful completion of the ETS examination (given only in French, German, Russian, or Spanish). Dates of and application for these examinations are made with the BYU Testing Service, B-268 ASB.
2. Successful completion of language courses 95 and 96 in either or both acceptable languages (offered only in French, German, or Spanish).
3. Successful completion of sixteen semester hours of credit in the foreign languages that are approved by the major department and the Graduate Council for the degree program. An average grade of B (3.0) must be attained.

Option III: One Language and One Tool Subject

This requirement may be met by including one of the languages in Option II plus eight to ten credit hours in any combination from the departments of Statistics, Computer Science, or Mathematics as approved for each department by the Graduate Council. Hours in mathematics would be beyond Math. 111.

Option IV: Single Tool Subject

This option would normally consist of an integrated program of eighteen to twenty-one semester hours of undergraduate studies in the departments of Mathematics, Statistics, and Computer Science in any combination, as approved for each department by the Graduate Council, showing systematic tool development. Hours in mathematics would be beyond Math. 111.

Comprehensive Examination

The student must pass a written comprehensive examination in his doctoral field under the direction of his major department. The minor department will be responsible for examining the student in the minor area. This examination will normally be given at the end of the second year of graduate study. Departments may also require an oral portion of the comprehensive examination.

Admission to Candidacy

Satisfactory completion of the language requirement and the comprehensive examination, and submission of a dissertation prospectus, approved by an advisory committee, are necessary for admission to candidacy for the Doctor of Philosophy degree.

The student has the responsibility of filing Form No. 5, Request for Admission to Candidacy, with the Office of the Graduate Dean when all conditions for admission to candidacy have been met. Notice by the dean of the Graduate School then admits the student to candidacy for the degree. **Every doctoral student must have been certified for candidacy at least one full semester prior to graduation.**

Dissertation

A minimum of eighteen hours of dissertation credit must be attained. An oral examination on the dissertation must be completed successfully by each candidate.

General University Services

University Library

The J. Reuben Clark, Jr., Library contains the library collection, which includes over one million bound volumes and an extensive collection of pamphlets and titles on microform. A large selection of professional journals and other current serials, as well as local, regional, and national newspapers, is also available. The library is a depository for United States, United Nations, Mexican, and Canadian government documents and regularly receives publications of state and local governments.

The general library facilities are available to students, faculty, alumni, and other interested persons. Regularly enrolled students present their identification cards to borrow books. Others may obtain a permit from the circulation librarian. The library is open during the college year from 7:00 a.m. to 11:00 p.m. Monday through Saturday. (Exceptions for Spring and Summer terms will be announced later.)

The general collection and subject reference materials are available on open shelves on four of the five levels—two below and two above the ground floor. The general reference collection, the public catalog, the circulation desk, and administrative offices are located on the ground level. Study space is interspersed with stack areas on each floor. An information booklet is available at the general reference desk to assist in the use of these facilities.

The special collections of the library, many of which are confined to specific subject areas, are located on the fourth level. Many of these fine collections are gifts to the library from individuals whose interests have led them to devote many years to their acquisition. The books and other materials from the special collections area are not available for general circulation.

The facilities of other libraries operated by the LDS Church are also available to students of Brigham Young University. The Genealogical Society Library in Salt Lake City contains approximately one hundred thousand books and over eight hundred thousand rolls of microfilm. These include family histories; genealogies; biographies and autobiographies; military records; cemetery inscriptions; town, county, and state histories of the United States; and both local and national histories of other nations. The Utah Valley Branch Genealogical Library, operating under the general direction of the society, has its headquarters at the J. Reuben Clark, Jr., Library.

Facilities of the library of the Church Historian's Office are available by arrangement to advanced students for research. The office is located in room 301 of the LDS Church Office Building, 47 East South Temple, in Salt Lake City, and is open from 8:00 a.m. to 5:00 p.m. Monday through Friday. Its collections contain publications of the Church, periodicals of the various auxiliary organizations, reports and histories of the various missions, general Church historical records, biographies of Church leaders, and other pertinent published and archival material.

Evening Classes

Regular graduate credit, equivalent to daytime classes, is given for evening classes. Day students may enroll in evening classes on their regular registration card by picking up cards marked "Section 90." An extra fee of \$3 per credit hour is charged for these classes. Class schedules, listing classes and giving detailed information about all procedures, are available free of charge upon request.

Evening class registration should not be confused with official admission to the Graduate School.

Off-Campus Centers

The University has established several off-campus centers for continuing education:

BYU-Ricks Center, 225 First Street, Idaho Falls, Idaho
BYU-Ogden Center, 555-24th Street, Ogden, Utah
BYU-Salt Lake Center, 200 North Main Street, Salt Lake City, Utah
BYU-California Center, 203 West Cottage Drive, Covina, California

Additional classes are offered in other geographical areas, administered by the campus-based department of Off-Campus Lectures and Courses.

Registration Requirements

Any individual with a baccalaureate degree may properly register for graduate classes. No class registered for on a nondegree basis may apply to a graduate degree program at Brigham Young University.

Application for Admission

A student desiring to enroll in a graduate program at BYU must take the initiative and be admitted to the Graduate School on a degree-seeking basis. Applications and letter forms are available at each center. Entrance examinations are also given periodically at the centers or may be taken at BYU in Provo.

Computer Services

Through the Computer Research Center extensive computing facilities are available to all faculty and students. In addition to equipment, extensive computer library programs and experienced personnel are available to help users with their own particular problems. It is expected that the academic users will provide their own programming and data preparation.

There are at present six major computing centers on campus:

1. The Computer Research Center is housed in the new Mathematical Sciences/Computer Building. Equipment includes an IBM 360/50 with one million bytes of bulk core and all basic input/output equipment, including remote terminals in the administrative and academic areas.
2. The Computer Research Center operates a satellite operation in 62 JKB which houses one IBM 1130 with standard reader, printer, disk, key-punches, and terminals.
3. The Science Computation Center, 142 ESC, includes a large-scale IBM 7030 with card and tape input and printer and tape output. This center also includes a PDP-15 with graphic terminal capability.
4. The Engineering Analysis Center includes an L3055 with punched card, optical card, and tape input as well as tape and printer output. This installation also has a SEL-810/B to accommodate data acquisition and computer control experiments. A twelve-inch plotter is also available.
5. The Engineering Technology Center, 215 SNLB, includes a PDP-8/I with card and paper tape input, paper tape output, and six remote terminals. In 115 SNLB there is a PDP-8/I with one Tektronix graphic screen and sensor probes attached to on-line real-time control of cutting tools.
6. The Psychology Department also has a PDP-8 in their experimental lab area which controls on-line experiments.

In addition to these six centers, there is a PDP-11 in the nuclear lab of the Eyring Science Center; a PDP-11, used by the Division of Instructional Services, which controls a switching network; and a Burroughs 500 in the Clark Building, which is used by Educational Media Services for counting purposes.

Though all of this is University-wide equipment, some of it has specialized commitments. Questions about the use of any equipment should be sent to the director of Computer Services, 167 MSCB.

Placement Center

The Placement Center, located in the Abraham O. Smoot Administration and General Services Building, assists graduating students and alumni in finding desirable positions in their fields in business, industry, government, and education. This office works in close cooperation with deans and department chairmen.

The placement service includes a placement library where interested students may find books, articles, magazines, and brochures that will acquaint them with employers in whom they may be interested and also books and pamphlets that contain advice on such matters as how to conduct oneself in an interview, how to write effective letters of application, how to find employment, etc.

All students are urged to register with the Placement Center early in the school year in which they will complete requirements for a degree. Early registration will enable that office to give the most effective possible assistance to each graduate seeking employment.

Student Employment

In the Employment Office assistance is given to needy students in finding part-time employment. This includes help not only in placing students in positions on the University campus, but also in finding part-time employment off campus.

In order that students may adequately pursue their academic work, it is suggested that they devote as much time as possible to their studies and not

attempt to work also. When a student must work in order to supplement his college funds, he should be aware that there is a maximum limit of twenty hours per week that he may work on campus.

Students needing employment are urged to register with the Employment Office as soon as possible after they arrive in Provo and are available for work. Need weighs most heavily in deciding who shall receive leads for jobs, but hours available and required skills are also important considerations. The best schedule for which part-time work can be arranged is one where the free hours (a block of three to four hours) are in consecutive order at the same time each day. Inasmuch as the number of students seeking part-time work is very high, those whose need is great are requested to report periodically at the Employment Office after filing initial application.

Students from foreign countries are required to obtain a work permit before they may take employment. Such students may receive assistance in obtaining the necessary permit from the foreign students adviser.

Security and Traffic

BYU Security is a protective agency established for the benefit of students and faculty and staff members. The Security Office maintains effective liaison with the local police department and is entrusted with the proper enforcement of campus rules and regulations. All matters concerning security or requiring police action should be referred to this office. Another major responsibility of BYU Security is the control of campus vehicle traffic and parking.

The Security Office offers a variety of other services to students and staff members, including the taking of fingerprints for teaching certificates, government jobs, and ROTC. In addition, an ambulance service is maintained in cooperation with the health center.

Automobile Registration

Every BYU student who expects to own, maintain, possess, drive, or store a motor vehicle in or about the city of Provo while the University is in session must register that vehicle with the Security Office within forty-eight hours after bringing it to the Provo area. The registration decal is issued without charge. It is for identification purposes only and does not entitle the holder to parking privileges on campus until after 4:00 p.m.

Brigham Young University maintains a zoned parking system, and students who wish to park their vehicles on campus during the day must obtain a parking permit. Upper-class permits for juniors, seniors, and graduate students are \$12. Lower-class permits—available for all students—are \$6.

To obtain a parking or registration decal, the following must be presented at the Security Office, B-69 ASB, or at registration:

1. Home-state vehicle registration certificate
2. BYU activity card
3. The appropriate fee (none for registration only)
4. The name of the company with which the vehicle is insured

For further details regarding traffic rules and regulations, the **Traffic and Parking Regulations** booklet may be obtained at no charge from the Security Office.

Out-of-State Students

Every student who is a resident of Utah or of a state other than those listed below must have a Utah driver's license if he wishes to drive in Utah. The following states have entered into a compact, and a driver's license from any of these is valid in all the others:

Alabama	Delaware	Iowa
Arizona	Florida	Kansas
Arkansas	Idaho	Louisiana
California	Illinois	Maine
Colorado	Indiana	Mississippi

Montana
Nebraska
Nevada
New Jersey

New Mexico
New York
Oklahoma
Oregon

Tennessee
Utah
Virginia
Washington

Students from out of state who do not have Utah license plates on their cars may obtain a nonresident permit for their vehicles as long as their main purpose for being in Provo is education. Full-time employees of the University or students whose wives are full-time employees do not qualify; they must purchase Utah plates and pay Utah property taxes on their vehicles. Either a nonresident permit or Utah license plates must be obtained immediately upon registration at the University. To obtain a nonresident permit, the student must present the following at a Security station:

1. Home-state vehicle registration certificate
2. Proof of current safety inspection from Utah or home state
3. Fifty cents
4. BYU activity card

Lyceums and Forums

Almost since its founding Brigham Young University has been bringing to its students distinguished men and women in the arts and letters. The lyceums, usually evening programs, are of cultural value. Forum assemblies, held each Thursday morning, feature speakers and artists who can offer students a better understanding of our contemporary civilization.

University Fees

The University reserves the right to change these figures without notice.

All students who register will be expected to pay tuition and fees prior to or at the time of registration. **Students are held responsible to pay the correct tuition and fees.**

Approximately 70 percent of the cost of operating the University is paid from the tithes of the LDS Church. Therefore, students who are active Church members, or their families, already have made a monetary contribution to the operation of the University. To equalize this burden somewhat it is necessary to charge nonmembers a higher tuition. Even the higher total payment, however, does not cover the total educational cost of nonmembers of the Church.

Tuition and General Fees

Full-time students (nine and one-half hours or over for undergraduate students; nine hours or over for graduate students)

	First Semester	Second Semester	School Year
LDS Church Members	\$300	\$300	\$600
Nonmembers	\$450	\$450	\$900

Part-time students (nine hours or less for undergraduate students; eight and one-half hours or less for graduate students)

(The tuition and fees paid as a part-time student do not entitle one to health service, student activity privileges, or physical education suit and facility privileges.)

	LDS Church Members	Nonmembers
Minimum tuition and fees	\$ 60.00	\$ 90.00
3 credit hours	85.00	130.00

4 credit hours	110.00	170.00
5 credit hours	135.00	210.00
6 credit hours	160.00	250.00
7 credit hours	185.00	290.00
8 credit hours	210.00	330.00

A fraction of an hour is, for fee assessment purposes, counted as a full credit hour.

All part-time students enrolled in one or more of certain physical education classes must pay an additional \$5. Check with the University cashier for applicable classes.

The charge for noncredit courses or for auditing courses is the same as for credit courses. Noncredit courses taken by part-time students will be assessed on the basis of hours involved in lecture classes. For example, three hours of lecture a week would be considered three semester hours and would be charged for accordingly. Therefore, if a student were taking eight credit hours plus a noncredit class involving two or more lecture hours per week, he would be considered a full-time student and must register as a full-time student. For courses in which no lecture hours are involved—for example, dissertations and theses—tuition and fees will be charged based on hours being carried during the semester, as determined by the supervising professor.

All graduate students who are not regularly registered but continue to use University services or facilities (including consultation with a major professor) will pay the minimum tuition equivalent to two semester hours during each semester in which University services or facilities are used.

Registration in Evening Classes

All daytime students will be required to pay an additional fee of \$3.00 per credit hour (credit, noncredit, and audit) for all hours carried under the Evening Classes program. Failure to pay this fee on the day of registration or the day on which an evening class is later added will result in a \$2.50 late-fee charge.

Admission Application Fee

A \$15 nonrefundable application fee must accompany the admissions application, both to be submitted by specified deadline dates.

Late Registration Fee

Late registration fees are assessed all full-time and part-time students for failure to complete registration on scheduled dates. No exception is made, regardless of the reason for being late.

1. First five regular school days following the scheduled registration date \$ 5.00
2. After the fifth day following scheduled registration date 10.00

Late fees for part-time students are assessed at 50 percent of the rate for full-time students.

Any student whose check is dishonored by his bank will be charged a handling fee of \$5. If the check was for tuition, there will be an additional charge of the late fee in effect at the time the check is redeemed.

Refunds

In the event of withdrawal by a student, a refund will be made on the basis of a charge of \$10 (\$5 for a part-time student) even though the student does not complete registration or attend school, plus a per-day charge of 3 percent of the total tuition and fees paid or payable for the semester. The days charged for will be the school days beginning with the first day of the semester in which classes were held following the date on which the student registered, to the day on which the student reported his withdrawal to the Office of the Graduate Dean, both days inclusive.

Late fees are not refundable.

Any refund due a student because of withdrawal from school will be made only by check, through the mail, three weeks from the date on which the student reported his withdrawal and surrendered his receipt or activity card to the Office of the Graduate Dean.

No refund will be granted to a student who is requested to withdraw for scholarship or other causes.

No refund will be made after August 31 of the school year in which payment was received by the University.

Miscellaneous General Fees and Fines

Graduation fee, master's or doctor's degree (only 50 percent refunded if degree is not obtained)	\$20.00
Graduation reevaluation fee (for students who defer graduation beyond the anticipated date on the original Application for Graduation card)	2.00
Late application for graduation fee (for those who apply after December 15 for June commencement and after February 15 for August commencement)	3.00
Graduate student service fee (for graduate students using University facilities without formal registration for University classes) per semester	Minimum tuition
Identification photo (payable at Photo Studio)	2.00
Change of registration fee (for each change slip presented after the first two weeks of each semester)	5.00
Change of grade fee (unless the change is the responsibility of the University)	3.00
Exemption examination, to exempt a student from taking a required class:	
If examination is taken with a group	2.00
If examination is taken alone	5.00
Graduate Special Examination	
To update credit and/or transfer credit from a nonaccredited institution or from a foreign university whose academic standards are not known to the faculty at BYU. (See page 38, "Credits Certified by Special Examination.")	
Examination, repeat foreign language, for advanced degree	10.00
Duplicate activity card	4.00
Spouse activity card (nonrefundable) per semester	10.00
Transcript fee	1.00
(\$1.00 for first copy on every order, plus \$.50 for each additional copy)	
Automobile and motorcycle registration and parking fee:*	
Zone B	
Academic year	12.00
Second semester or Summer School	6.00
Second session, Summer School	3.00
Zone C	
Academic year	6.00
Second semester or Summer School	3.00
Second session, Summer School	1.50
*Registration is mandatory and no fee is charged if student elects NOT to park on campus.	
Zone D	
Academic year	6.00
Second semester or Summer School	3.00
Second session, Summer School	1.50

Bicycle registration	1.00
Traffic violation fines	Variable, according to violation
Thesis binding (4 copies)	11.00 to 15.00
Hold placed on credits for unpaid bill	2.00
Records search fee	1.00

Fees for Instruction in Music and Speech

For fees in special private instruction in music and speech see the general catalog, University Fees section. For fees in special speech consultation contact the speech clinic.

Recital Fee	\$25.00+
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Fees for Departmental Facilities and Services

Education 569, 673—4 credit hours	\$25.00
Education 568, 569, 673—2 credit hours	15.00
Nursery School:	
Smith Family Living Center, with lunch	49.50
Smith Family Living Center, no meals	30.00
Ashton House, no meals	30.00
Recreational Education 502	10.00
Sociology 524, 597	3.00

Rentals

Organ rental, one hour per day, per semester	\$10.00
Each additional hour per day, per semester	8.00
Harpsichord, clavichord rental, one hour per day, per semester	10.00
Each additional hour per day, per semester	8.00
Harp rental, one hour per day, per semester	10.00
Each additional hour per day, per semester	8.00
Piano rental, one hour per day, per semester	7.50
Each additional hour per day, per semester	6.00
Practice room without piano, one hour per day, per semester	4.50
Each additional hour per day, per semester	3.00
Recorder rental, per instrument, per semester, tenor and bass	3.00
Recorder rental, per instrument, per semester, alto	2.00
Recorder rental, per instrument, per semester, soprano	1.00
Fine imposed on students who use rooms but have not paid the fee	2.00
Locker rental (McKay Building and Eyring Science Center)	
1 semester	1.50
2 semesters	2.50
2 semesters and Summer Session	3.00
Key deposit	1.00
Replacement of lost key	1.00

Deposits

Physical education padlock deposit (maximum refund, \$4.00)	\$ 5.00
Industrial education	1.00
Chemistry (each laboratory class)	10.00
Aerospace Studies (all AFROTC students - \$.50 will be retained for flight insurance.)	14.00
Military science (all Army ROTC students)	14.00

Student Personnel Services

The Student Personnel Services offer valuable assistance in the following areas that affect graduate students: academic standards, counseling service, foreign students advising, health services, student organizations and social life, and student publications.

Dean of Students

The dean of students is the chief administrative officer of Student Personnel Services. He initiates and recommends to the President needed policies and procedures in student life, and administers the program and coordinates the agencies at work on student problems, which include academic standards, counseling service, international student adviser, orientation, scheduling of University facilities, student health service, student organizations and social life, student publications, University standards and veterans' affairs.

Counseling Center

Of primary concern to Brigham Young University is the welfare of each individual student. Throughout the course of an education, students are confronted with difficult decisions, problems of adjustment, or the need to develop their interpersonal or social skills. They may find it helpful to seek the assistance of persons who are trained and skilled in working with students in these areas. For this reason the University maintains a fully accredited Counseling Center, staffed by well-qualified, professional counselors.

The overall purpose of the Counseling Center is to promote the personal growth of individuals within society and within the University community. To reach as many students as possible, the Counseling Center extends itself beyond the confines of the center by locating counselors in a number of areas on campus. The services provided to students include (1) counseling, (2) skills development, (3) testing, and (4) information.

Counseling

A great number of students seek counseling each year for a variety of reasons. In general, they come to the center for reasons of growth or decision making. Specifically, students come for help in such areas as making vocational choices or choosing majors, dealing with study problems, developing social and interpersonal skills, growing in greater self-understanding, and working through personal problems. Some students find that individual counseling on a one-to-one basis with a counselor offers greater assistance, while others may benefit more in a group counseling situation, where several students and a counselor meet together. In both individual and group counseling, the primary focus is not upon the student's deficits or upon long-term therapy—although the latter is not neglected; rather, it is upon assisting the student to grow, mature, and accept full responsibility for his actions.

Skills Development

In addition, the Counseling Center provides a program to assist students in developing academic, social, and interpersonal skills to aid them in coping more effectively with college life and other situations. Students may participate in one or more of a variety of learning programs, where they may be taught the skills they wish to improve. Such a program may be individually worked out for each student with the help of a counselor.

Testing Services

Tests for achievement, ability, interest, and adjustment are given to all students who request them through a counselor. Data from these tests are used as a basis for counseling in educational-occupational and personal-social problems. The Testing Service provides psychological test data for the use of counselors and faculty advisers; placement tests for various University academic

groups; and assistance in preparing, administering, scoring, and analyzing subject-matter tests for various departments within the University.

Informational Services

A comprehensive, current collection of essential occupational, educational, personal, and social information is maintained in the Counseling Center library. In addition to many occupational monographs, briefs, and current catalogs of major universities and technical schools, there is an abundance of materials relating to personal and social adjustment, including such areas as personality development, dating, marriage, budgeting, personal grooming, and college adjustment.

International Student Advisement

Brigham Young University has established an office for the advisement of students who are not citizens of the United States. International students include all students who have F-1, J-1, or immigrant or permanent resident visas, even if the holder is presently residing in the United States. Such students should direct their correspondence to the International Student Office, A-245 ASB, so that there will be no delay in receiving application forms and other materials related directly to their admission. International students must forward complete transcripts of credit to the International Student Office before application forms will be provided.

While on the BYU campus, all international students may take advantage of the services offered by the international student adviser.

Student Health Service

Student health services are available through the University for all full-time students at the Howard S. McDonald Student Health Center. The center functions year-round, twenty-four hours a day, seven days a week. Hospitalization, when necessary, is available at the Utah Valley LDS Hospital. The health center offers the following services at a reasonable cost:

1. Consultation with a nurse-practitioner, general physician, or specialist—by appointment—between 8:30 a.m. and 4:30 p.m. weekdays
2. Immunization and tuberculosis detection and treatment
3. Pharmacy
4. Physical therapy upon referral from a physician
5. Laboratory tests
6. X-ray examination
7. Emergency care twenty-four hours a day

A doctor will be summoned after hours for emergencies on a fee-for-service basis. Services not available at the health center are available by referral at outside facilities.

To complement the services of the student health center, a supplemental insurance program, designed to cover the major cost of medical care twenty-four hours a day, is offered to all full-time students at a nominal cost. This voluntary program is fully endorsed by the University and provides for a wide range of medical services. Students not otherwise protected by health insurance are urged to secure this excellent service. For further information, insurance brochures are available at the health center.

The health center is bound by the laws of confidentiality, and personal information will not be released to a third party without written permission from the patient.

Code of Student Conduct

At Brigham Young University honor has traditionally been understood as voluntarily living in accordance with the principles of The Church of Jesus Christ of Latter-day Saints. This is the standard of Brigham Young University.

The Church sponsors BYU for the principal purpose of providing for its members and other interested persons an opportunity to obtain a university education in an atmosphere consistent with Church ideals, principles, and goals.

Students who enroll at Brigham Young University are expected to maintain high standards of honor, integrity, and morality; to be gracious in personal behavior; and to apply Christian ideals in everyday living. The Code of Student Conduct applies to all BYU students, both members and nonmembers of The Church of Jesus Christ of Latter-day Saints. Acceptance of admission is a voluntary commitment to uphold Church standards, whether on or off campus, during all periods of enrollment.

The University is not only dedicated to learning and advancing knowledge but also to developing ethically sensitive and responsible persons. It seeks to achieve these goals through a sound educational program and sound policies governing student conduct that encourage individual responsibility and maturity.

Disciplinary action may be taken for—

1. Failure to live the high moral standards of The Church of Jesus Christ of Latter-day Saints, including observance of the law of chastity.
2. Dishonesty, including cheating, plagiarism, or knowingly furnishing false information to the University or other constituted authority.
3. Forgery, malicious destruction, damage, alteration, or misuse of University documents, records, or identification, including library materials.
4. Obstruction or disruption of teaching, research, administrative, or disciplinary procedures or of other University activities, including public service functions and authorized activities on University premises.
5. Physical abuse of any person on University-owned or supervised property or at University-sponsored or supervised functions, or conduct which threatens or endangers the health or safety of another person.
6. Theft of or damage to property of the University, a member of the University community, or a campus visitor.
7. Unauthorized entry into or use of University facilities.
8. Vandalism, stealing, or kidnapping committed either on or off campus.
9. Violation of University policies or regulations concerning the registration and/or functioning of student organizations.
10. Use, possession, or distribution of narcotics or other dangerous drugs, including but not limited to amphetamines, barbiturates, hallucinogenic drugs (such as marijuana and LSD), except as prescribed by a licensed practicing physician.
11. Violation of rules governing residence in University-owned housing or approved off-campus housing.
12. Disorderly, lewd, indecent, obscene, or otherwise illegal or immoral conduct on or off campus.
13. Failure to comply with directions of University officials acting in the performance of their duties.
14. Failure to adhere to University standards of dress.
15. Use of tea, coffee, alcoholic beverages, or tobacco in any form.

A violation of the Code of Student Conduct is grounds for disciplinary action, which may include, in serious or repeated cases, withdrawal of the privilege of enrollment at the University.

The Office of the Dean of Students is responsible for administering the Code of Student Conduct. For information regarding any aspect of the code, contact the Office of the Dean of Students, A-209 ASB. The President of the University may clarify any disciplinary policy.

Veterans Service

All veterans should have their military experience evaluated for credit by the Office of Admissions and Records.

Veterans' Affairs

For information concerning educational benefits available to those who qualify under the Veterans' Readjustment Benefit Act, please contact the Veterans' Affairs and Selective Service Office, A-229 ASB, or call Ext. 3433. Forms for certification may be secured and processed to assure proper payment of benefits.

War Orphans Education Program

Students who are dependents of veterans under the War Orphan Education Program, and who are entitled to benefits, should also contact the above office for enrollment certifications and related information.

Religious Opportunities

Students have many excellent opportunities to participate in religious activities, which have always been an integral part of the educational program at Brigham Young University.

BYU Stakes

The Church is organized into a number of stakes, and each stake is composed of several wards. Each ward has 200 to 300 members. The stakes and wards are organized specifically to provide students the maximum opportunity for active participation in programs of the Church. Spiritual growth and the development of a strong testimony of the divinity of Jesus Christ are goals fostered by the stake and ward organizations. The ward programs are closely correlated at all levels with the activities of the University.

All single LDS students living away from home become members in one of the BYU wards. Married students not living in University housing may attend either the BYU ward or the city ward in which they reside. The membership records of students remain in the BYU stakes until the students complete their schooling at the University.

Devotional Assemblies

Devotional assemblies are held each Tuesday morning and are scheduled so that there is no conflict with classroom work. These assemblies enable students to hear messages of inspirational power from carefully chosen Church leaders, including many General Authorities of The Church of Jesus Christ of Latter-day Saints.

Student Housing

Learning to live harmoniously with other people under the right kind of living conditions plays a vital part in a college education. Students living in groups, working, studying, and enjoying recreation together, gain much from each other. The conversations, good fellowship, and activities experienced in group living contribute to a person's whole development. Participation in democratic, self-governing living activities brings about a phase of education which can be gained in no other way.

The Office of Student Housing, established to assist students with their housing needs, is located in the Abraham O. Smoot Administration and General Services Building. All inquiries or administrative problems relating to housing needs should be referred to this office.

Campus Housing

Residence-Hall Supervision

Each area of campus housing is organized under the supervision of a person with professional training and experience for this type of work. The residence-hall staff carries out a program designed to provide each student with experiences

in democratic self-government, in cultivating the responsibilities that go with maturity and independence, and in learning the art and science of human relationships in working and living with others. The staff assists the student to achieve a sense of belonging and to develop social competence through planned social and recreational programs. Head residents are available for general counseling. They carry out the residence-hall program in cooperation with other University academic services.

Applications

A student who plans to enroll at the University and live in a University residence hall should make inquiry to the Office of Student Housing about a year in advance. A housing application form will be sent to each inquiring student. A \$10 application fee is required and should be enclosed with the completed application form when it is returned to the Office of Student Housing. A residence-hall assignment and appropriate agreement forms are prepared on a basis of the date of receipt of the application form by the housing office and are mailed in the late spring and early summer.

Acceptance to University Housing

The validating of any campus housing reservation is contingent upon the student's official acceptance and admission to the University. For admission to the University contact the Graduate Admissions Office, D-251 Abraham O. Smoot Administration and General Services Building.

Rental Agreements

A student planning to live in campus housing may expect to sign a rental agreement for the accommodations he will occupy. He should be prepared to live by the terms of this agreement once he has signed and returned it to the Office of Student Housing. Misunderstanding and financial loss can be avoided by a student if he will read and familiarize himself with the terms of the agreement before signing it.

Apartment Living for Women

Housing for women is provided in twenty-four Heritage Halls. These are apartment-type buildings. Each apartment consists of a combination kitchen-dining-study room arrangement, three bedrooms, and a bath. In addition, there are large living rooms, a recreation room, a head resident apartment, and laundry and storage facilities in each building. Six girls occupy an apartment and live cooperatively, preparing their own meals. The apartments are completely furnished except for bedding, kitchen utensils, and dishes. The facilities are excellent and offer a high standard of living for college students. The approximate annual rate for these accommodations is \$340. Food is purchased cooperatively by the residents of each apartment.

Help in the homemaking experiences of budgeting, buying, meal planning, and the selection, care, and construction of clothing is available from specialists who are assigned to Heritage Halls. In addition, a specialist is available to assist students in planning social activities, developing recreational skills, and learning wise use of leisure time.

Each woman student desiring to live on campus should consider carefully the type of accommodations desired in view of her economic needs, time available for activities within her housing situation, and type of experience desired. Agreements are made for the academic year, and moving from one type of accommodation to another during the year is difficult to arrange.

Residence Halls

Board and room services for men and women are provided in eight buildings known as Helaman Halls and six buildings in Deseret Towers. These buildings form a beautifully designed residence-hall development. The buildings are conveniently grouped around an attractively planned and developed central building. Each residence hall accommodates 234 to 264 students, with two persons sharing each bedroom. In addition, living rooms, study rooms, central shower areas, recreational rooms, adequate laundry and storage facilities, and a head resident apartment are located in each building. These halls provide

some of the best student living experiences offered on any university campus. The central building features spacious dining rooms and a snack bar, providing the excellent food service for which BYU is noted. This building also contains beautiful living rooms, recreational areas, administrative offices, and other management facilities such as mail rooms and laundry and dry cleaning pickup stations. The approximate annual rate for these accommodations is \$865. A few single rooms are available at an approximate rate of \$925.

Apartments and Homes for Married Students

Family accommodations for 612 married couples and their children are provided in housing developments known as Wymount Terrace and Wyview Park. All units in married-students' housing are assigned according to family size.

Wymount Terrace—which includes 24 residence buildings, an administration building, and 3 laundries—consists of 462 apartments. There are 108 one-bedroom units, 60 one-bedroom-study units, 264 two-bedroom units, and 30 three-bedroom units. The monthly rental rates are approximately \$74.50 for the one-bedroom units, \$80.50 for the one-bedroom-study units, \$84.50 for the two-bedroom units, and \$94.50 for the three-bedroom units. In addition, each family pays for its electricity. Balconies or porches for all apartments open on courtyards. Apartments have an all-tile bathroom, a kitchen with modern appliances, including garbage disposal units, gas ranges, electric refrigerators, and an attractively designed living room.

Wyview Park—which consists of 150 mobile homes and a central building—will accommodate 150 married couples and their children. There are 36 one-bedroom units, 78 two-bedroom units, and 36 three-bedroom units. These units will be rented on the same basis as Wymount Terrace with the same monthly rates as corresponding units in that area. All mobile homes are unfurnished with the exception of refrigerators and stoves.

The Residential Housing Department can assist those who desire to live off campus in finding suitable apartments in the Provo community.

Residential Housing

All students living off campus are required to live in University-approved housing. The Residential Housing Department of the Office of Student Housing maintains up-to-date listings of approved residences. This office is established to assist students upon their arrival in Provo to find suitable quarters if they desire to reside in the community.

Residential housing consists of apartments, rooms with kitchen privileges, board and room residences, and sleeping rooms located in homes in the community. These facilities are inspected by University representatives to see that they comply with established standards before they are approved for student occupancy. Through the cooperative efforts of landlords and the University, constructive action has been taken to raise the standard of student housing throughout the community. Before making any commitments for residential housing, students should be sure that the place in which they contemplate living has been approved by the University.

A student planning to reside in the community should expect to sign a student-landlord rental agreement form, which will be furnished by the University Housing Department. He should be prepared to live by the terms of this agreement once it has been signed, and a copy should be returned to the Office of Student Housing. Misunderstanding and financial loss can be avoided if the student will read and familiarize himself with the terms of the rental agreement form before signing it.

Rates

Rates for residential housing accommodations vary with the type of service provided; consequently, only a general indication can be given here. Sleeping rooms rent from \$25 to \$40 per month. Apartment accommodations run from \$35 to \$50 per month per student. Board and room is available at the rate of \$65 to \$80 per month. Apartments for married students can be obtained at a rate of approximately \$65 to \$130 per month.

Time of Arrival

Residence halls are not open to a student prior to the announced opening date, usually the day before freshman orientation. The University does not advise a student who is going to live in campus housing to arrive before that date.

Food Service

Regular meal service is provided for students at three different cafeterias on campus. Two of these are operated as part of the board-and-room service of residence halls. It is possible for students living off campus to buy meal tickets at reduced prices and eat in these places. The other cafeteria is in the Ernest L. Wilkinson Center, where meals are served at reasonable prices either for cash or by reduced-rate scrip books. In addition, by contacting the Office of Student Housing, board-and-room students may participate in a supplemental food program costing approximately \$90 a year more than the regular board-and-room rates.

The University operates four snack bars: one in the Ernest L. Wilkinson Center, a second in the George Albert Smith Fieldhouse, a third in the Helaman Halls Cannon Center, and a fourth in Deseret Towers. Food is available throughout the day. Food also may be secured from vending machines located throughout the campus. Costs of meals and food service are kept as low as possible, consistent with sound operating management.

The University also operates a dairy products laboratory where milk, ice cream, and other dairy products may be purchased by students and faculty at very favorable prices. Students preparing their own meals find this service both desirable and economical.

List of Courses

General

Students should consult the class schedule for specific information concerning semesters or terms in which classes are offered, except as specially noted.

Semester System

Courses of study at Brigham Young University are offered and credit for satisfactory completion is granted on a semester basis.

Course Numbering System

Course Number	Type of Course
500 to 599	Graduate courses open also to advanced undergraduate students
600 to 799	Graduate students only

Credit-Hour Designation

The three-number code for credit hours, listed in parentheses following the course title, has the following significance:

First number:	Semester hours of credit
Second number:	Class hours of lecture, recitation, or seminar meeting per week or minimum hours of individual study required per week
Third number:	Laboratory hours required per week or hours of field study or individual research per week

Abbreviations and Symbols

The following abbreviations and symbols are used in the List of Courses section:

Arr.	Class or laboratory hours arranged
ea.	Credit-hour designation applies to each course number listed
□	Course originating in one department which may count for credit in another department
R	Course which may be repeated for credit

Cross-Referencing of Courses

Each course is listed completely only once in the catalog. If the course may count in another department, it is listed in abbreviated form in that department and is preceded by a special symbol, □.

Graduate Courses

No D credit can apply toward a graduate degree. Neither lower-division nor correspondence credit can be applied toward a graduate degree.

Reservation of Right to Change Courses

At the time of printing of this catalog, the University intends to offer the courses listed herein but reserves the right to eliminate or discontinue any of them or to add new courses.

Listing of Professors

Professors listed under each department title include members of the graduate faculty only.

Accounting

Professors: H. Andersen, Johnson, Knighton, Orton, K. Skousen, J. Smith, R. Smith, Taylor (graduate coordinator, 348 JKB).

Associate Professors: Cameron, Garrison, Hubbard, McAllister, F. Skousen, Woodfield (chairman, 350 JKB).

Assistant Professors: L. Anderson, Grant.

Program: Master of Accountancy (M.Acc.).

Entrance Examination Required: Admission Test for Graduate Study in Business (ATGSB), Educational Testing Service, Box 966, Princeton, New Jersey 08540. Applications available at the BYU Testing Office (B-238 ASB).

Application Consideration Dates: Same as Graduate School deadlines.

Entry Times: Fall or Winter semesters, or Spring Term.

Master of Accountancy

Prerequisites: The following courses or their equivalents must have been taken prior to entering the program. Those who have not completed these prerequisites are urged to register in the College of Business as undergraduate students as if seeking a second bachelor's degree until these requirements are completed.

Acctg. 201, 232, 301, 302, 311, 342, 356, 411

Econ. 111, 112, 301, or 302

Bus. Mgt. 301, 341

Org. Behav. 321

Comput. Sci. 130

Math. 108

Stat. 221

Foreign students for whom English is not their native language are required to take at least 12 semester hours in accounting subjects, including intermediate accounting (at an American university), before they can be considered for admission.

Minors Permissible: Business management, economics, organizational behavior, or Option II (supporting fields).

Requirements: Minimum of 32 semester hours, initial oral examination, written comprehensive examination, final oral examination.

Required Courses: Acctg. 612, 613, 632, 675, 691R; Org. Behav. 610; Bus. Mgt. 639; and one of the following: Econ. 353, Bus. Mgt. 668, or Bus. Mgt. 690.

Three-Year Master's Degree Program

The department also offers the Three-Year Master's Degree Program. Students are permitted to enter this program at the beginning of their junior year in college and complete the program at the end of one year in Graduate School. Details of this program may be obtained from the coordinator of graduate studies in accounting.

Courses

401. Special Problems in Accounting I. (2:2:0) Prerequisite: Acctg. 302.

Includes partnerships, joint ventures, consignments, installments, receiverships, estates and trusts, and statements of affairs.

402. Special Problems in Accounting II. (2:2:0) Prerequisite: Acctg. 302.

Home office and branch accounts, business combinations, foreign exchange, and parent and subsidiary accounting.

- 403. Accounting for Nonprofit Organizations.** (2:2:0) Prerequisite: Acctg. 202 or 301.
Accounting concepts and methods applicable to governmental units, universities, hospitals, and other nonprofit organizations.
- 420. Federal Taxes.** (3:3:0) Prerequisite: Acctg. 202 or 301.
- 421. Advanced Tax Problems.** (3:3:0) Prerequisite: Acctg. 420.
Advanced study of federal income tax, estate and gift taxes, and special problems in corporate taxation.
- 442. Advanced Business Law.** (3:3:0) Prerequisite: Acctg. 342.
Business law for accountants and businessmen, with emphasis on laws covered in professional accounting examinations.
- 455. Data Processing Systems.** (3:3:0) Prerequisite: Acctg. 356.
Principles governing design and installation of accounting systems and the selection of equipment for optimum performance in data processing cycles.
- 457. Advanced Computer Programming.** (3:1:3) Prerequisite: Acctg. 356.
Emphasis on the solution of practical problems in data processing. Individual work on the University's computer and comparison of various computers in current use.
- 465. Auditing Theory and Professional Ethics.** (3:3:0) Prerequisites: Acctg. 302, 311.
- 475. Current Problems in Accounting Theory.** (3:3:0) Prerequisites: Acctg. 302, 311.
- 486. Contemporary Professional Accounting Problems.** (3:3:0) Prerequisites: Acctg. 420; completion of or concurrent registration in Acctg. 465, 401, and 402.
Study in accounting problems with emphasis on problems encountered in professional examinations.
- 612. Managerial Cost Accounting.** (3:3:0) Prerequisites: Acctg. 302, 311.
Study of specialized areas in cost determination and cost allocation.
- 613. Seminar in Resource Allocation and Control.** (3:3:0)
- 615. Controllership.** (3:3:0) Prerequisites: Acctg. 302, 311.
Profit planning, control techniques, interpretation of data, and policy formulation.
- 621. Tax Research and Planning.** (3:3:0) Prerequisites: Acctg. 420 and preferably Acctg. 421.
Research and solving of tax problems using the tax code, regulations, and other sources.
- 665. Auditing Seminar.** (3:3:0) Prerequisite: Acctg. 465.
A study in auditing concepts and philosophy and of their application to modern auditing methods and techniques.
- 675. Theory of Accounts and Statements.** (3:3:0) Prerequisites: Acctg. 302, 311.
History and development of accounting and financial statements, their meaning and interpretation. Problems in current accounting theory will be considered.
- 687. Seminar in Accounting and Reporting Problems.** (3:3:0) Prerequisites: Acctg. 302, 420, 465, and 475.
An in-depth study into the current accounting and reporting problems and their solutions.
- 691R. Research Seminar.** (1-3:1-3:0) Prerequisite: approval of graduate advisory committee.
Three hours' credit required in M.Acc. program to cover research methodology, discussion of current topics of student research, and writing a research paper in proper form.

- 693. Reading and Conference.** (1-3:1-3:0)
Subject to be arranged with instructor.
- 696. Accounting Internship.** (1-3:Arr.:Arr.) Prerequisite: Acctg. 302. Recommended: Acctg. 465.
Practical on-the-job experience and training with industrial and public accounting firms.
- 699. Thesis for Master's Degree.** (6-9:Arr.:Arr.)
This course number should also be used for continuing registration by students working on theses.

Agronomy and Horticulture

Professors: Allred, Farnsworth, Laws (graduate coordinator, 271 WIDB), Robison (chairman, 259 WIDB), Walker.

Assistant Professor: Williams.

Program: Master of Science (M.S.).

Entrance Examination Required: A written, comprehensive examination on undergraduate work, normally given during the first week after registration as a graduate student.

Application Consideration Dates: Same as Graduate School deadlines.

Entry Times: Any regular registration.

Master of Science

Prerequisites: Undergraduate major in the field or the equivalent.

Fields: Soil science, crop science.

Minors Permissible: Statistics, chemistry, botany, mathematics, or physics; Option II.

Requirements: Minimum of 24 semester hours plus thesis (6-hr. min.).

Required Courses: Stat. 501, 502; Agron. 694R each semester.

Courses

- 511. Soil Physics.** (3:2:3) Prerequisites: Agron. 282; Math. 101 or 105; one semester inorganic chemistry (101 or higher). Laws
Physical properties of soils and their effects upon air, water, and temperature in relation to soil management and crop production.
- 520. Saline and Alkali Soils.** (3:1:6) Prerequisites: Agron. 302, 305. Farnsworth
Physical and chemical properties of saline and alkali soils, their diagnosis, reclamation, and management for crop production.
- 540. Advanced Crop Production.** (3:3:0) Prerequisites: Agron. 151, 305, 459; Bot. 440. Robison
Basic concepts in plant-soil-climatic relationships, with emphasis on recent advances in crop culture and management.
- 550. Advanced Horticulture.** (3:3:0) Prerequisites: Hort. 318 or 340 or 351, and 352; Bot. 440.
Fundamental principles relating to horticultural practices and physiological development.

- 560. Soil and Plant Analysis.** (2:0:6) Prerequisites: Agron. 305; Chem. 223. Laws
Laboratory chemical analysis of soils and plant materials in soil fertility research.
- 598R. Conferences and Reports.** (1-2:1-2:0 ea.)
Preparation and writing of reports on selected agronomic subjects.
- 605. Chemistry of Soil-Plant Relationships.** (4:3:3) Laws
- 607. Soil Physical Conditions.** (3:3:0) Laws
- 614. Advanced Soil Microbiology.** (3:2:3) Prerequisites: Agron. 305; Micro. 121; Chem. 223. Farnsworth
- 659. Advanced Plant Breeding.** (2:2:0) Prerequisite: Agron. 459. Allred
- 694R. Seminar.** (1:1:0 ea.)
- 697R. Research.** (Arr. ea.)
- 699. Thesis for Master's Degree.** (6-9:Arr.:Arr.)

Animal Science

Professors: Cannon, Hoopes, Orme, Shumway (chairman, 375 WIDB), Wallentine.
Associate Professors: Gardner, Park.

Program: Master of Science (M.S.).

Entrance Examinations Required: None.

Application Consideration Dates: Same as Graduate School deadlines.

Entry Times: Any regular registration.

Master of Science

Prerequisites: A bachelor's degree in animal science or completion of courses with an equivalent background. Undergraduate courses should have included approximately 35 hours taken from the following subjects or their equivalent:

Micro. 121, 321, 331, 371, 501
Math. 105, 109, 111
Bot. 101, 376
Chem. 105, 106, 151, 223, 352, 384, 581
Physics 201, 202
Stat. 221, 336, 337
Zool. 203, 376, 417, 465, 483
Bio. Agr. Ed. 201

Fields: Nutrition, breeding, physiology, meat science, management.

Minors Permissible: Agricultural economics, agronomy, microbiology, botany, chemistry, education, zoology, computer science, or statistics.

Requirements: Minimum of 24 semester hours plus thesis (6-hr. min.).

Required Courses: Zool. 520 or English 99.

Courses

- ☐ **Statistics 501, 502.** Statistics for Research Workers I, II. (5:4:3)

- 507. Animal Nutrition.** (3:3:0) Prerequisites: An. Sci. 207; Chem. 151 or equivalent. Recommended: Chem. 384. Gardner
A study of the functions of nutrients in metabolism, measuring feed values, assessing nutrient requirements.
- 508. Animal Nutrition Laboratory.** (2:0:6) Prerequisite: completion of or concurrent registration in An. Sci. 507. Gardner
Sampling methods, chemical analysis of feeds and blood, digestion trials, classical nutritional deficiencies, and research techniques are studied.
- 515. Advanced Animal Breeding.** (3:3:0) Prerequisite: An. Sci. 153 or a genetics course. Park
Applications of genetic principles for livestock improvement. Emphasis on selection methods and mating systems.
- ☐ **Statistics 531. Experimental Design.** (3:3:0)
- 560. Advanced Dairy Production.** (3:3:0) Gardner
Includes the physiology and biochemistry of lactation, genetic improvement, dairy layout designs, disease control, nutritional requirements.
- 601. Experimental Animal Techniques.** (2:2:0)
- 660. Advanced Livestock Management.** (2:1:3)
- 691R. Advanced Topics in Animal and Meat Science.** (1-2:0:3-6 ea.)
- 692R. Seminar.** (1:2:0 ea.)
- 699. Thesis for Master's Degree.** (6-9:Arr.:Arr.)

Anthropology and Archaeology

Professors: Christensen, Jakeman (graduate coordinator, 136 MSRB).

Associate Professors: Matheny, Myers (chairman, 150 MSRB).

Assistant Professor: Berge.

Program: Master of Arts (M.A.) in archaeology only.

Entrance Examination Required: A qualifying examination must be taken during the first semester of graduate work unless this examination has already been taken at the end of the senior year in the case of students entering Graduate School from the undergraduate program at Brigham Young University.

Application Consideration Dates: Same as Graduate School deadlines.

Entry Times: Fall and Winter semesters only.

Master of Arts

Prerequisite: Undergraduate major in archaeology or equivalent.

Fields: Near Eastern, Mesoamerican, prehistoric southwestern, historic North American.

Minors Permissible: Any established minor in the humanities or the sciences; Option II.

Requirements: Minimum of 15 semester hours in archaeology plus the thesis (6-hr. min.—699); German, French, Spanish or other relevant language proficiency; and a comprehensive examination prior to undertaking thesis research.

Required Courses: Archaeol. 500, 505, 510; at least one session of 455R or 590R; and equivalent field experience.

This department is affiliated with the BYU-New World Archaeological Foundation. This affiliation affords some graduate students opportunity for field experience in Mexico.

The program is designed to prepare students for Ph.D. work and a professional career in archaeology.

Courses

500. **History and Theory of Archaeology.** (2:2:0) Christensen, Jakeman
505. **Research Design.** (3:3:0) Prerequisite: consent of instructor. Matheny
Orientation to research with emphasis upon interdisciplinary approaches to archaeological problems.
510. **Classification of Material Culture.** (3:2:1) Matheny
Systems and procedures of taxonomy for material culture, with emphasis upon classification of ceramics.
541. **Museum Studies.** (3:1:4) Berge
545. **Advanced Near Eastern and Mediterranean Archaeology.** (3:2:2) Pre-requisite: Archaeol. 310 or 318. Christensen, Jakeman
555. **Advanced Mesoamerican Archaeology.** (3:2:2) Prerequisites: Archaeol. 350 and 355. Jakeman, Matheny
- 590R. **Seminar.** (2:2:0 ea.)
611. **Introduction to Ancient Near Eastern Iconography.** (2:1:2) Jakeman
A study of the motifs and symbolism of Mesopotamian, Egyptian, Israelite, and other ancient Near Eastern art.
631. **Introduction to Mesoamerican Hieroglyphics and Iconography.** (2:2:0) Jakeman
The motifs and symbolism of ancient Mesoamerican art, and the ancient Mayan and Mexican writing and calendar systems.
- 651R. **Advanced Field Methods of Archaeology.** (5:0:15 ea.)
671. **Advanced Interpretative Methods.** (2:2:2) Berge
- 695R. **Library Research.** (2:0:6 ea.) Prerequisite: consent of instructor.
- 697R. **Field Research.** (5-10:0:15-30 ea.)
699. **Thesis for Master's Degree.** (6-9:Arr.:Arr.)

Art

Professors: Andrus, Gunn, Mathews, Turner, Weaver, Wilson.

Associate Professors: Breinholt, Burnside, Darais, Johansen, Magleby, Tippetts (graduate coordinator).

Programs: Master of Arts (M.A.), Master of Fine Arts (MFA). Applicants should note the differences between the Master of Arts degree and the Master of Fine Arts degree. Applicants for admission to the Master of Fine Arts degree program must submit a portfolio of their art work. This should be deposited with the Art Department no later than the application deadlines listed below. Slides will be acceptable for heavy or bulky works.

Entrance Examination Required: Interview with a committee of the graduate faculty during registration.

Application Consideration Dates: March 1 for Spring and Summer terms and Fall Semester, October 1 for Winter Semester.

Entry Times: Any regular registration.

Master of Arts

Prerequisites: Undergraduate major in art or its equivalent; proficiency in basic drawing and design fundamentals in two-dimensional and three-dimensional work; at least 20 semester hours of upper-division work, including 7 semester hours in art history.

Fields: Painting and sculpture, design (crafts, ceramics, commercial art, print-making).

Minors Permissible: Either of the above fields may be selected as a minor or one may be taken in education.

Requirements: Minimum of 24 semester hours plus thesis (6-hr. min.). At least 15 semester hours, exclusive of thesis, must be in one of the fields listed above and at least 9 semester hours in a minor field.

Required Courses: 4 semester hours in Art 600R.

The Master of Arts degree is intended to stress the academic thrust of art.

Master of Fine Arts

Prerequisites: Undergraduate major in art or its equivalent; proficiency in basic drawing and design fundamentals in two-dimensional and three-dimensional work; and at least 20 semester hours of upper-division work, including 7 semester hours in art history.

Fields: Painting and sculpture, design (crafts, ceramics, commercial art, print-making).

Minors Permissible: None.

Requirements: Minimum of 32 semester hours in one of the two areas listed above; minimum of 12 semester hours in the other of these two areas; minimum of 10 semester hours of undergraduate or graduate art history (total hours, 54). Also, a one-man show and a terminal MFA project.

Required Courses: 4 semester hours in Art 600R, 620R, and 690.

The Master of Fine Arts is an applied, or performance, degree. The program must be completed in residence, with an average grade of B or higher each semester.

Toward the end of the third semester of his program the candidate will demonstrate his proficiency in his chosen field and a supporting creative field in a one-man exhibit of art produced during his program.

Before beginning the fourth semester of his program the candidate will submit plans to the graduate art faculty for a terminal MFA project. The project is a final work or works of art created by the candidate. To be acceptable it must represent a professional level of quality and the candidate's peak achievement during his MFA program. It may be retained by Brigham Young University as part of its permanent collection.

Although a thesis is not required, an orderly record is necessary in which the MFA candidate traces, by means of personal statements, photographs, transcripts, news clippings, etc., his artistic development during his two years in the program.

Courses

500. **Philosophy of the Fine Arts.** (2:2:0) Recommended: Phil. 213 and any of the art appreciation classes or Hum. 101.
518. **Architectural Mural Media.** (2:2:2) Prerequisites: Art 227, 320, 321 or 322. Historical backgrounds, studio work in design, and execution of murals.
- 578R. **Art Education Studio.** (3:1:5 ea.)
595. **Seminar.** (1:0:2)
- 600R. **Individual Study in Art History.** (2-8:Arr.:Arr.)
Allows graduate study in depth into any chosen historical art era.
- 618R. **Advanced Architectural Mural Media.** (2-8:Arr.:Arr.) Prerequisite: Art 518.
- 620R. **Advanced Design.** (4:4:4 ea.) Prerequisite: Art 320.
- 621R. **Advanced Drawing.** (2:2:2 ea.)
- 622R. **Advanced Figure Drawing.** (4:4:4 ea.) Prerequisite: Art 621R.
- 627R. **Advanced Painting.** (2-8:Arr.:Arr.)
- 633R. **Advanced Watercolor.** (2-8:Arr.:Arr.)
- 636R. **Advanced Industrial Design.** (2-8:Arr.:Arr.)
- 641R. **Advanced Graphic Design.** (2-8:Arr.:Arr.)
- 650R. **Advanced Printmaking.** (2-8:Arr.:Arr.)
- 656R. **Advanced Sculpture.** (2-8:Arr.:Arr.)
- 659R. **Advanced Ceramics.** (2-8:Arr.:Arr.)
- 661R. **Advanced Crafts and Advanced Metal.** (2-8:Arr.:Arr.)
- 677R. **Survey of Recent Studies in Art Education.** (2:2:0)
678. **Art Education.** (2:2:0)
679. **Advanced Arts and Crafts for Elementary Teachers.** (2:2:1)
690. **Color.** (2:2:0)
692. **Color.** (2:2:0) Prerequisite: Art 690.
695. **Seminar.** (1:1:0)
- 697R. **MFA Project for Master's Degree.** (2-8:Arr.:Arr.)
699. **Thesis for Master's Degree.** (6-9:Arr.:Arr.)

Asian Studies

Professors: Hillam, Hyer, Palmer (coordinator, 121 FOB).

Associate Professor: Farnsworth.

Assistant Professors: Britsch, Montgomery.

Program: Master of Arts (M.A.).

Entrance Examination Required: None.

Application Consideration Date: Same as Graduate School deadlines.

Entry Times: Any regular registration.

Master of Arts

Prerequisites: Proficiency in one Asian language; strong undergraduate preparation in Asian studies.

Field: Asian studies.

Minors Permissible: Any approved minor.

Requirements: The Master of Arts candidate will—

1. Complete a major in one of the departments of the University (all departmental requirements must be fulfilled for the major).
2. Complete at least 15 hours in approved Asian area courses at the graduate level from areas other than the department major, including two seminars in the Asian area.
3. Write a thesis on an Asian subject that is acceptable to both majors (for example, a student in history would write his thesis on Asian history).

Required Courses: Asian Studies 499.

Courses

Economics

535. Economic Problems of Asia. (3)

Geography

571. Problems of Asia. (2)

History

640. The Far East. (2)

648. Culture of Asia. (2)

692. Seminar in Asian History. (3)

Political Science

359. Modernization and Political Change. (3)

551. Political System of China. (3)

552. Political System of Japan. (3)

558. Modernization and Political Change in Asia. (3)

580. International Relations of Asia. (3)

695R. Seminar in Foreign Governments and Comparative Politics (Asia). (1-3 ea.)

697R. Seminar in International Relations (Asia). (1-3 ea.)

Religion

555. Comparative World Religions (Asian). (2)

556. Comparative World Religions (Asian). (2)

559. The Church in Asia. (2)

659R. Seminar in History of Asian Religion. (1-6 ea.)

UNDERGRADUATE (Upper-division)

Anthropology

*350. Peoples of South and East Asia. (3)

Art

*302. Oriental Art. (2)

Asian Studies

499. Senior Seminar in Asian Studies. (3)

*Core courses for undergraduate major.

Economics

330. Economic Development. (3)

Geography

*470. Asia. (3)

History

*340. Premodern Asia. (3)

*341. Modern Asia. (3)

*342. Korea. (3)

*343. Formative Period of Chinese Civilization. (3)

*344. Modern China. (3)

*345. Formative Period of Japanese Civilization. (3)

*346. Modern Japan. (3)

*347. India. (3)

348. Southeast Asia. (3)

*349. Central Asia. (3)

439. Russian Expansion into Asia. (3)

440. Communist China. (3)

Chinese (Mandarin)

301. Third-Year Chinese. (4)

311. Third-Year Conversation. (2)

321, 322. Selected Readings and Composition. (3)

440. Historical Survey of Chinese Literature. (3)

441, 442. Introduction to Classical Chinese. (4 ea.)

443, 444. Modern Chinese Literature. (4 ea.)

445. Chinese Civilization. (3)

490R. Individual Study in Chinese. (1-3)

495. Senior Seminar for Majors. (2)

Japanese

301. Third-Year Japanese. (4)

311. Third-Year Conversation. (2)

321. Selected Readings and Composition. (3)

322. Selected Readings and Composition. (3)

443, 444. Modern Japanese Literature. (3 ea.)

490R. Individual Study in Japanese. (1-3 ea.)

Religion

*453A. Mormonism and the World's Religions. (2)

*Core courses for undergraduate major.

Botany and Range Science

Professors: Andersen, Christensen (graduate coordinator, 489 WIDB), Harrison, Hess, Julander, Moore, Murdock, Stutz, Vallentine.

Associate Professors: Stocks (chairman, 499 WIDB), Tidwell, Weber, Whitton.

Assistant Professors: Brotherson, Rushforth, Wood.

Programs: Master of Science (M.S.), Doctor of Philosophy (Ph.D.).

Entrance Examination Required: A written diagnostic examination on undergraduate work, normally given during the first month after registration as a graduate student.

Application Consideration Dates: Same as Graduate School deadlines.

Entry Times: Any regular registration.

Master of Science

Prerequisites: Students working toward a graduate degree in botany should have a basic understanding of general botany, cytology, anatomy, taxonomy, genetics, morphology, physiology, and ecology. Students working toward a graduate degree in range science should have a basic understanding of general botany, taxonomy, genetics, physiology, ecology, range management, range analysis, and animal nutrition and management. They should also have training in mathematics, chemistry, physics, microbiology, soils, and zoology adequate for advanced study in areas of specialization. Where deficiencies exist, provision must be made for correcting them.

Fields: Botany, range science.

Minors Permissible: Any established minor in the sciences, humanities, or social sciences; Option I or II.

Requirements: Minimum of 24 semester hours plus thesis (6-hr. min.).

Required Courses: None.

Doctor of Philosophy Degree in Botany

Prerequisites: A master's degree in botany or the equivalent.

Fields: Botany.

Minors Permissible: Any approved minor.

Requirements: Minimum of 24 semester hours plus dissertation (18-hr. min.).

1. One major area of specialization within the department.
2. One minor area of specialization within the department (at least 15 semester hours).
3. One minor sequence outside the department (consisting of at least 15 hours).

Required Courses: None.

BOTANY

Courses

- 501. Histological Technique.** (2:0:6) (Offered 1973-74 and alternate years)
Prerequisite: Bot. 101 or Zool. 105. Moore
Techniques of preparing plant tissues for microscopic examination.
- 510. Advanced Taxonomy.** (3:2:3) Prerequisites: Bot. 210, 276, or consent of instructor. (One three-day field trip to be arranged.) Welsh
- 515. Agrostology: Taxonomy and Ecology of Grasses.** (2:1:3) (Offered 1972-73 and alternate years) Prerequisite: Bot. 210. Harrison
Classification and ecology of grasses. Important forage species are emphasized.
- 522. Biological Instrumentation.** (3:1:6) (Offered 1972 and alternate years)
Prerequisite: graduate status or permission of instructor. Weber
Theory and application of research instruments to biological problems.
- 525. Ultrastructural Interpretation.** (3:3:0) Prerequisite: Bot. 225, or Zool. 465 or 466 or Chem. 581. Moore, Whitton
Study of ultrastructure and morphology of the cell.

533. **Algology.** (3:2:3) (Offered 1973-74 and alternate years) Prerequisite: Bot. 331. Rushforth
A detailed study of the algae, including classification and morphology.
535. **Advanced Mycology.** (4:2:6) (Offered 1973-74 and alternate years) Prerequisite: Bot. 335 or equivalent. Weber
A detailed study of taxonomy and morphology of special groups.
539. **Paleobotany.** (3:2:3) (Offered 1973-74 and alternate years) Prerequisites: Bot. 101 or 105; Geol. 103. Tidwell
550. **Plant Geography.** (3:2:3) (Offered 1973-74 and alternate years) Welsh
The distribution of plant species and communities in the light of present and past climates.
557. **Experimental Ecology.** (2:0:6) (Offered 1972-73 and alternate years) Murdock
Investigations on the phenology of selected species.
610. **Botanical Terminology and Nomenclature.** (2:2:0) (Offered 1972-73 and alternate years) Prerequisite: consent of instructor. Welsh
A detailed study of botanical terminology, including the contributions of Latin and Greek words, their gender, number, and case.
620. **Cell Biology.** (3:2:3) (Offered 1973-74 and alternate years) Prerequisite: Bot. 525; Chem. 581. Andersen
A study of structure and physiology of cell membranes and organelles.
621. **Electron Microscopy.** (2:2:0) Hess
Theoretical and practical aspects of electron microscopy of biological material, including electron diffraction, tissue preparation, replication, shadow casting of specimens and freeze-etch procedures as they apply to various sciences.
622. **Electron Microscopy Laboratory.** (1:0:3) Prerequisites: consent of instructor and completion of or concurrent registration in Bot. 621. Hess
630. **Angiosperm Morphology.** (4:3:3) (Offered 1972-73 and alternate years) Prerequisite: familiarity with taxonomy, anatomy, and physiology or biochemistry. Tidwell
634. **Morphogenesis.** (3:2:3) (Offered 1973-74 and alternate years) Prerequisite: familiarity with taxonomy, anatomy, and physiology or biochemistry. Moore
The development of form in organisms, with emphasis on plants.
638. **Advanced Mycology II.** (2:1:3) (Offered 1972-73 and alternate years) Prerequisite: a laboratory course in microbiology, botany, or zoology. Weber
Advanced studies of fungi, with emphasis on genetics.
641. **Physiology of Fungi and Algae.** (4:3:3) (Offered 1973-74 and alternate years) Prerequisites: Bot. 335 and 440. Stocks, Weber
655. **Field Ecology.** (2:1:Arr.) Prerequisite: consent of instructor. Christensen, Murdock
Ecological field work in forests and rangelands.
676. **Cytogenetics.** (3:2:3) (Offered 1972-73 and alternate years) Prerequisites: genetics and cytology. Andersen, Stutz
678. **Organic Evolution.** (3:3:0) Prerequisite: genetics or consent of instructor. Stutz
- 691R. **Graduate Seminar.** (1:1:0 ea.)
- 698R. **Special Problems.** (1-3:0:3-9 ea.)
699. **Thesis for Master's Degree.** (6-9:Arr.:Arr.)

- 740. Advanced Plant Physiology I.** (3:2:3) (Offered 1973-74 and alternate years) Prerequisites: Bot. 440; Chem. 351. Harrison
- 741. Advanced Plant Physiology II.** (3-4:2-3:3) (Offered 1972-73 and alternate years) Prerequisites: Bot. 440; Chem. 351. Stocks
- 742. Plant Nutrition and Growth.** (3:2:3) (Offered 1972-73 and alternate years) Prerequisite: Bot. 440. Harrison
- 750. Grassland and Desert Ecology.** (3:3:0) (Offered 1972-73 and alternate years) Prerequisite: consent of instructor. Christensen, Murdock
- 752. Forest Ecology.** (3:3:0) (Offered 1973-74 and alternate years) Prerequisite: consent of instructor. Christensen, Murdock
- 760. Conservation of Natural Resources.** (3:2:3) (Offered 1972-73 and alternate years) Prerequisite: consent of instructor. Christensen, Julander, Moore, Murdock
- 776. Population Genetics.** (3:3:0) (Offered 1973-74 and alternate years) Prerequisite: genetics. Stutz
- 799. Doctoral Dissertation.** (Arr.)

RANGE SCIENCE

Courses

- ☐ **Agricultural Economics 520. Management of Ranch Resources.** (3:2:2) Prerequisites: senior or graduate standing and consent of instructor. Corbridge, Shumway, Vallentine
- 561. Watershed Management.** (3:2:3) Murdock
- 691R. Graduate Seminar.** (1:1:0 ea.)
- 698R. Special Problems.** (1-3:0:3-9 ea.)
- 699. Thesis for Master's Degree.** (6-9:Arr.:Arr.)

Business Education

Professors: Bell, D. Peterson.

Associate Professors: Nelson (chairman, 351 JKB), Perry (graduate coordinator, 361 JKB), B. Petersen, Polson, G. Smith, Stoddard, Waters.

Assistant Professors: H. Smith, Warner.

Program: Master of Science (M.S.).

Entrance Examinations Required: None.

Application Consideration Dates: Same as Graduate School deadlines.

Entry Times: Any regular registration.

Master of Science

Prerequisites: Bus. Ed. 320 or equivalent. Background in statistics.

Fields: Office education, consumer education, distributive education.

Minors Permissible: Any approved minor.

Requirements: Minimum of 24 semester hours plus thesis (6-hr. min.).

Required Courses: Bus. Ed. 605, 625, and 3 hours selected from 615, 620, 655, and 690A,B,C,D, with approval of advisory committee.

This program is designed to prepare business teachers for junior colleges and other post-secondary institutions and to improve instruction for secondary school business teachers.

Courses

- 605. **Introduction to Research in Business Education.** (3:3:0)
- 615. **Methods of Instruction in Business Education: Typewriting and Shorthand.** (3:3:0)
- 620. **Methods of Instruction in Business Education: Bookkeeping and Economic Education.** (3:3:0)
- 625. **Tests and Measurements in Business Education.** (3:3:0) Prerequisite: introductory statistics.
- 630. **Current Developments Influencing the Curriculum and Content of Business Education.** (2:2:0)
- 635. **Implications of Research for Improved Classroom Instruction.** (3:3:0)
- 640. **Trends of Thought in Business Education.** (2:2:0)
- 650. **Supervision and Administration in Business Education.** (2:2:0)
- 655. **Cooperative Business Education.** (2:2:0)
- 675, 676. **Business Education Workshop.** (2-3:2-3:0 ea.)
- 690A,B,C,D. **Seminar in Business Education.** (1:17:23 ea.)
- 692. **Research Project.** (1-4:Arr.:Arr.)
- 694. **Independent Readings.** (1-2:1-2:0)
- 699. **Thesis for Master's Degree.** (6-9:Arr.: Arr.)

Business Management

Professors: Christensen, W. Dyer, Nielson, Oaks, Taylor, Edwards, Daniels.

Associate Professors: Barnes, Call, Covey, Daines (director, MBA program, 253 JKBA), Garrison, Hubbard, Lambert, Pinney, Rickenbach, Stanford.

Program: Master of Business Administration (MBA).

Entrance Examination Required: Admission Test for Graduate Study in Business offered by the Educational Testing Service, Box 966, Princeton, New Jersey 08540.

Application Consideration Dates: Continuously from March 1 to June 30.

Entry Time: Fall Semester only.

The MBA program is designed primarily for the nonbusiness management major. Although the candidate will gain a general understanding of the functions and relationships of business, the primary objective of the MBA program is to develop his creative problem-solving skill.

Master of Business Administration

The Master of Business Administration program awards an MBA degree at the successful completion of a two-year graduate course of study. The summer months are to be used at the discretion of the candidate, although work in industry is encouraged.

The major focus of the MBA is an integration of the managerial functions. The curriculum attempts to fulfill this major task by utilizing the following basic stems of training: (1) administrative, (2) environmental, (3) operations, (4) quantitative-analysis, and (5) communications.

The administrative stem embraces principles of human behavior, group dynamics, human relations theory, and business policy. In the environmental stem one is involved with micro- and macroeconomics, government and business, and international business. The operations stem involves production, marketing, and finance. In the quantitative stem a candidate receives an extensive and intensive exposure to mathematics, accounting, statistics, electronic computer programming, and operations research. Finally, in the communications stem, a candidate considers and uses the written word in case analysis and research reports.

This program is demanding in terms of time and intellectual activity. The MBA candidate is expected to—

1. Use quantitative tools and scientific methods in analyzing the problems and policies of the economy and the individual business firm.
2. Communicate effectively.
3. Use sound analysis and perceptive interpretation of economic and social forces.
4. Work with people to achieve individual and organizational objectives.
5. Make sound decisions under conditions of uncertainty.

Prerequisites: A bachelor's degree in a nonbusiness management field.

Minors Permissible: None.

Requirements: 64 semester hours.

Required Courses: Consult departmental brochure.

Courses

610. Managerial Economics. (3:3:0)

Analysis of the decision-making behavior of consumers and firms in a market economy.

611. Written Analysis I. (2:3:0)

Written analysis of the characteristics of an administrative viewpoint.

612. Quantitative Business Analysis I. (3:3:0)

Techniques of mathematics, with special emphasis on applications to business situations.

613. Management Computer Concepts. (2:3:0)

The development of electronic computer concepts and programming with a focus on the role of a computer in a business firm.

614. Management Control I. (3:3:0)

Accounting as a tool for management; coordination of departmental operations; and control of assets.

616. Organizational Behavior. (3:3:0)

A training laboratory experience devoted to the stimulation and support of administrative learning and change.

620. Environmental Economics. (3:3:0)

Analysis of the measurement, level, and rate of growth of national income.

- 622. Quantitative Business Analysis II. (2:3:0)**
The use of probability and statistical inference in risk situations. The focus is on business problems.
- 623. Management Simulation. (1:3:0)**
Integration of functional areas of business and organizational behavior by use of computer simulation techniques.
- 624. Management Control II. (3:3:0)**
Accounting as a means of coordinating the operations of a business firm with market conditions.
- 625. Marketing Management I. (2:3:0)**
Imaginative problem solving in marketing management with the aid of business cases and readings.
- 627. Production Concepts. (3:3:0)**
Cases and readings on current production processes and problems.
- 628. Business Finance I. (2:3:0)**
Development of the subject of finance from the point of view of the business manager. Emphasizes the use of financial statements and develops techniques and concepts for analysis of liquidity, profitability, and financial planning.
- 631. Written Analysis II. (1:1:0)**
The preparation of a major topical research report drawn from first-hand industrial observation.
- 635. Marketing Management II. (2:3:0)**
A strategic approach to product planning, pricing, consumer profiles, and market development.
- 636. Human Relations. (2:3:0)**
Concepts of human relations theory with particular emphasis on group and intergroup conflict.
- 638. Business Finance II. (2:3:0)**
Analytical approach to such financial management concepts as capital budgeting and investment decision making, valuation, reorganization, dividend policy, and long-range financial planning.
- 639. Business Policy I. (3:3:0)**
A top-management approach to the problem of implementing corporate strategy.
- 641. Written Analysis III. (2:3:0)**
An analytical critique and presentation of a major topical research report.
- 649. Business Policy II. (2:3:0)**
A top-management approach to the problem of implementing corporate strategy.
- 652. Advanced Mathematical Analysis for Business Decisions. (3:3:0)**
A study of quantitative decision models under certainty, risk, and uncertainty.
- 654. Controls III. (3:3:0)**
Profit planning, cost analysis, and impact of federal income taxes on business decisions.
- 655. Business Research. (3:3:0)**
Application of research techniques in solving specific problems in marketing and management.
- 657. Systems Analysis and Design. (3:3:0)**
Analyzing the problems of planning, controlling, and improving systems.

658. Investments. (3:3:0)

The principles and practice of investment, with special attention to investment analysis, elements of the investment process and markets, and criteria for investment decision. Problems of both individual and institutional investors will be considered.

659. Problems in Small Business Management. (3:3:0)

Consideration of management problems faced by founders, owners, managers, and investors in small businesses.

660. The Business Administrator and Government Policy. (2:3:0)

The impact of governmental policies and practices on a business administrator.

665. Management of Distribution. (3:3:0)

Sales organization; planning and control; selection and training of salesmen; supervision of decentralized operation.

668. Management of Financial Institutions. (3:3:0)

Review and analysis of the structure of our overall financial system to develop understanding of the primary forces which affect this system. Consideration of the major financial management problems of principal financial institutions.

675. International Business Management. (3:3:0)

Business decision making in other countries, with emphasis on financial reporting, personnel practices, production processes, and marketing channels.

678. Seminar in Investment Management. (3:3:0) Prerequisite: Bus. Mgt. 658.

Primarily for students with a professional interest in investments. Considers alternative concepts and theories involved in the construction and management of common stock and fixed-income security portfolios.

679. Business, Society, and the Individual. (3:3:0)

Ethical concepts in business administration and the influence of business upon the individual and the total social environment.

693. Readings and Conference. (1-3:Arr.:0)

Subjects to be arranged with instructor.

Chemistry

Distinguished Professor: Hall.

Professors: Anderson (graduate coordinator, 124 ESC), Blackham, Broadbent, Bryner, Butler, Castle, Goates, Gubler (biochemistry coordinator, 659 WIDB), Hawkins (chairman, 225 ESC), Izatt, Nelson, Ott, Snow, Swensen, Vernon.

Associate Professors: Bills, Bradshaw, Cluff, Mangum, Pack, Paul, Smith, White, Wilson.

Assistant Professors: Dalley, Mangelson, Thorne, Woolley.

Programs: Master of Science (M.S.), Master of Arts (M.A.-3 Program), Doctor of Philosophy (Ph.D.).

Entrance Examination Required: A written examination of the student's undergraduate preparation in chemistry, given the week preceding his initial registration. If a student shows deficiencies, he will be required to take appropriate undergraduate courses.

Application Consideration Dates: Same as Graduate School deadlines.

Entry Times: Any regular registration.

Teaching: The Chemistry Department relies upon its graduate students for many assignments in laboratory and recitation instruction. Unless a student is excused by the faculty, he will be expected to teach a cumulative total of at least two semesters at 20 hours a week during his residency toward the doctoral degree, half of which must come after his first year in residency. Master's degree candidates are expected to teach half this amount.

Master of Science

Prerequisites: Undergraduate major in chemistry or the equivalent. Proficiency in French, German, or Russian; or in mathematics beyond calculus; or in computer science.

Fields: Analytical-physical chemistry; biochemistry (see Graduate Section of Biochemistry); inorganic, organic, and physical chemistry.

Minors Permissible: Option I or Option II.

Requirements: 24 semester hours plus a thesis (6-hr. min.—699).

Required Courses: As specified by committee.

Master of Arts

(M.A.-3 Program)

Prerequisite: Undergraduate major in chemistry or the equivalent.

Requirements: The department offers the three-year master's degree program wherein the student wishing to prepare for high school or junior college teaching may obtain the Master of Arts degree in chemistry. This program will normally begin at the end of the student's sophomore year. Details may be obtained from the chairman of the Chemistry Department.

Doctor of Philosophy

Prerequisites: Master's degree in chemistry or the equivalent. Proficiency in French, German, or Russian; or in mathematics beyond calculus; or in computer science.

Fields: Analytical-physical chemistry; biochemistry (see Graduate Section of Biochemistry); inorganic, organic, and physical chemistry.

Minors Permissible: Any approved minor.

Requirements: 50 semester hours plus a dissertation (18-hr. min.—799).

GRADUATE SECTION OF BIOCHEMISTRY

Professors: Gubler (chairman and graduate coordinator, 659 WIDB), Swensen, Vernon.

Associate Professors: Mangum, Smith, White.

Graduate degrees in biochemistry are administered by the biochemistry faculty of the Chemistry Department. Qualified faculty in other departments may (with approval of the graduate dean) become active members of the graduate section of biochemistry and serve as members or chairmen of graduate advisory committees.

Programs: Master of Science (M.S.), Doctor of Philosophy (Ph.D.).

Entrance Examination Required: A written examination of the student's undergraduate preparation in chemistry. (Apply to graduate coordinator to schedule this examination.)

Application Consideration Dates: Same as Graduate School deadlines.

Entry Times: Any regular registration.

Teaching: Students will be expected to teach a cumulative total of at least two semesters at 20 hours per week.

Master of Science

Prerequisite: Baccalaureate degree in physical, biological, or agricultural sciences from an accredited college or university. Students with bachelor's degrees in fields other than chemistry should have successfully completed one-year courses in organic and in physical chemistry.

Fields: Biochemistry.

Minors Permissible: Any established minor in the physical, biological, agricultural, or food sciences; Option II.

Requirements: Minimum of 24 semester hours plus thesis (6-hr. min.—699).

Required Courses: Chem. 462, 581, and 584.

The final oral examination for the M.S. will consist of two parts: (1) a public presentation of the candidate's original research described in his thesis and (2) a comprehensive examination on course work, research, and thesis, administered by the graduate advisory committee.

Doctor of Philosophy

Prerequisite: A master's degree in biochemistry or the equivalent.

Fields: Biochemistry.

Minors Permissible: Any established minor in the physical, biological, agricultural, or food sciences, or combination thereof.

Requirements: 50 semester hours plus dissertation (18-hr. min.—799).

Courses

- 504. Instrumental Analysis.** (2:1:3) Prerequisite: concurrent or previous registration in Chem. 464.
- 514. Inorganic Chemistry.** (3:3:0)
- 518. Inorganic Synthesis.** (2:0:6) (Offered 1973-74 and alternate years)
- 521. Analytical Chemistry.** (2:2:0) Prerequisite: Chem. 464.
- 522. Chemical Instrumentation.** (2:0:6)
- 524. Quantitative Microanalysis.** (2:1:3) (Offered 1972-73 and alternate years)
- 551. Systematic Identification of Organic Compounds.** (3-4:2:3-6)
- 552. Advanced Organic Chemistry.** (3:3:0)
- 561. Chemical Thermodynamics.** (3:3:0) Prerequisite: Chem. 462.
- 562. Advanced Chemical Thermodynamics.** (2:2:0) (Offered 1973-74 and alternate years) Prerequisite: Chem. 561.
- 563. Reaction Kinetics.** (2:2:0)
- 564. Nuclear and Radiochemistry.** (2:2:0) (Offered 1973-74 and alternate years) Prerequisite: Chem. 462.
- 565, 566. Modern Physical Chemistry.** (2:2:0 ea.) Prerequisite: Chem. 462.
- 581. Biochemistry.** (4:4:0) Prerequisite: Chem. 352.
- 584. Biochemistry Laboratory.** (2:0:6) Prerequisite: Chem. 581.

- 594R. **General Seminar.** (1:1:0 ea.) Required of all senior and graduate students in chemistry every semester in residence.
598. **Special Problems.** (Arr.) Registration by permission.
600. **Directed Teaching in Chemistry.** (1:1:0)
601. **Geometry of Atoms and Molecules.** (3:3:0)
611. **Chemistry of Main Group Elements.** (3:3:0) (Offered 1973-74 and alternate years)
612. **Chemistry of Transitional Elements.** (3:3:0) (Offered 1972-73 and alternate years)
658. **Organic Synthesis.** (3:1:6) (Offered Fall 1973 and every third semester)
681. **Biochemistry of Lipids.** (2:2:0)
682. **Biochemistry of Nucleic Acids.** (3:3:0)
683. **Biochemistry of Carbohydrates.** (2:2:0)
684. **Biochemistry of Proteins.** (3:3:0)
- 697R. **Master's Candidate Research.** (Arr. ea.)
699. **Thesis for Master's Degree.** (6-9:Arr.:Arr.)
719. **Selected Topics in Inorganic Chemistry.** (1-3:1-3:0)
729. **Selected Topics in Analytical Chemistry.** (1-3:1-3:0)
751. **Mechanisms of Organic Reactions.** (3:3:0) (Offered Fall 1972 and every third semester)
757. **Chemistry of Natural Products.** (3:3:0) (Offered 1972-73 and alternate years)
758. **Heterocyclic Compounds.** (3:3:0) (Offered 1973-74 and alternate years)
759. **Selected Topics in Organic Chemistry.** (1-3:1-3:0)
761. **Statistical Mechanics.** (3:3:0) (Offered 1972-73 and alternate years)
765. **Quantum Chemistry.** (3:3:0) (Offered 1973-74 and alternate years)
766. **Quantum Chemistry.** (2:2:0) (Offered 1973-74 and alternate years)
769. **Selected Topics in Physical Chemistry.** (1-3:1-3:0)
782. **Mammalian Biochemistry.** (3:3:0) (Offered 1973 and alternate years)
789. **Selected Topics in Biochemistry.** (1-3:1-3:0)
- 797R. **Doctoral Candidate Research.** (Arr. ea.)
799. **Dissertation for the Ph.D. Degree.** (Arr.)

Child Development and Family Relationships

Professors: Cannon, Knowles, Moss (chairman and graduate coordinator, 1239 SFLC), Porter, Rollins.

Associate Professors: Allred, Cahoon, Mead, Price, Vance.

Assistant Professors: Burr, Cutler, Hoopes, Scoresby.

Programs: Master of Science (M.S.), Doctor of Philosophy (Ph.D.).

Entrance Examinations Required: An oral evaluation interview with all Ph.D. candidates plus the MMPI for all applicants in the marriage and family

counseling area. Where a meeting is not feasible, additional information about the student's background and academic goals will be requested in written form.

Application Consideration Dates: Applications for Fall Semester of the following year will not be accepted after March 1. Limited availability for Winter Semester may be considered November 15, depending upon enrollment.

Entry Times: Summer and fall.

Master of Science

Prerequisites: An introductory statistics course which includes inferential statistics (i.e., Psych. 370, Sociol. 320, Stat. 221, or Stat. 552 at BYU) and a research methods course (i.e., Psych. 369 or Sociol. 397). In addition, area prerequisites are—

Family Relationships: CDFR 361 and an upper-division undergraduate course in social psychology or sociological theory.

Child Development: CDFR 210 and an upper-division undergraduate course in personality or learning theory.

Marriage and Family Counseling: CDFR 210 and 361, or equivalent, and an upper-division undergraduate course in learning theory.

Fields: Child development, family relationships. An early childhood education emphasis is currently available as an Option II program in child development. Marriage and family counseling is currently an Option II program in family relationships.

Minors Permissible: Option I or Option II.

Requirements: Minimum of 24 semester hours plus a minimum of 6 hours of thesis (currently the family relationships Option II for marriage and family counseling requires additional hours). A departmental graduate student handbook is available in the departmental office, specifying in detail departmental requirements and procedures.

Required Courses: No classes are specifically required since the focus is on competency attainment rather than class completion. The following, however, are the usual core courses: Child development—CDFR 410, 460, 514, 560, 610, and 611; Family relationships—CDFR 410, 460, 514, 560, and three of the following: 660, 661, 662, 663, and 665.

Doctor of Philosophy

Prerequisites: A master's degree in this or a related field, or the equivalent.

Fields: Child development, family relationships, marriage and family counseling.

Minors Permissible: Any minor approved by the advisory committee.

Requirements: Minimum of 24 semester hours in addition to the master's degree plus dissertation (18-hr. min.). Five copies of the dissertation are required by the department.

Required Courses: As designated by committee.

Courses

501R. Workshop in Child Development. (1-2:1-2 wks.; 8 hrs./day:0 ea.) Pre-requisite: 8 hours in CDFR or consent of department chairman.
Intensive study in the application of principles of child development and child guidance.

- 502R. Workshop in Family Relationships.** (1-2:1-2 wks.; 8 hrs./day:0 ea.) Prerequisite: 8 hours in CDFR or consent of department chairman.
Intensive study in the application of principles of family relationships.
- 503R. Workshop in Marriage and Family Counseling.** (1-2:1-2 wks.; 8 hrs./day: 0 ea.) Prerequisite: 8 hours in CDFR or consent of department chairman.
Intensive study in the application of principles of marriage and family counseling.
- 514. Theories of Child Development.** (3:3:0) Prerequisite: CDFR 410.
- 540. Introduction to Marriage and Family Counseling.** (3:3:0) Prerequisite: CDFR 460. Recommended: CDFR 461. Allred, Hoopes, Mead, Scoresby
Theories and techniques used in marriage and family counseling. Consideration of individual and group counseling as they pertain to the family.
- 560. Advanced Family Relationships.** (3:3:0) Prerequisite: CDFR 460.
Burr, Cannon, Moss
Analysis of theories and research about the premarital dyad, marital dyad, and family interaction.
- 566. Materials and Procedures in Family Life Education.** (2:2:0) Prerequisite: consent of instructor. Moss
An evaluation of materials, resources, and procedures in teaching family life education in the high school.
- 570. Community and Professional Responsibilities to Children and Families.** (2:2:0) Prerequisites: CDFR 410 or 460. Duerden, Knowles
Acquaintance with resources of the community as they relate to the welfare of children and families. A consideration of the responsibilities of professional persons working with children and families.
- 575. Parent Education.** (2:2:0) Prerequisite: CDFR 410 or 460. Knowles
Basic principles in organization of parent study programs. Formulation and presentation of program for parents.
- 590. Readings in Child Development and Family Relationships.** (1-2:1-2:0) Prerequisites: CDFR 410 or 460 and consent of instructor.
Discussions and reports of current readings in this field.
- 595. Special Topics in Child Development and Family Relationships.** (1-2:1-2:0) Prerequisites: CDFR 410 or 460 and consent of instructor.
Individual study for qualified students majoring in child development and family relationships upon consultation with the instructor and the chairman of the department.
- 596R. Research Methodology.** (3:2:2 ea.) Prerequisites: CDFR 410 or 460; Stat. 552 (concurrent registration permitted). Burr, Rollins, Vance
Principles of research methodology applied to the identification, evaluation, creation, and utilization of empirical knowledge in child development-family relationships.
- 610. Physical and Intellectual Development of Children.** (3:3:0) Prerequisite: CDFR 514.
A systematic survey of current theories and research on physical and intellectual development from conception through adolescence.
- 611. Emotional and Social Development of Children.** (3:3:0) Prerequisite: CDFR 514.
A systematic survey of current theories and research on emotional and social development from conception through adolescence.
- 616. Measurement Techniques in Child Development.** (2:2:1) Prerequisites: CDFR 410, 510; Psych. 450.
- 622R. Supervision and Administration in Early Childhood Education.** (2:2:TBA ea.) Prerequisites: CDFR 210, 323, 422. Cahoon, Taylor
A practicum for developing administrative and supervisory skill in training teachers of preschool children.

- 623. Curriculum Development in Preschool Education.** (2:2:2) Prerequisites: CDFR 323, 422; Ed. 301A. Cahoon, Jones, Vance
Comparison and evaluation of various preschool curricula; examination of research in preschool curricula; application of preschool curricular innovations; application of criterion tests related to various preschool curricula.
- 640. Theories of Counseling Marital Dyads in Groups.** (3:3:0) Prerequisite: CDFR 540. Hoopes, Scoresby
- 649. Systems Analysis for Marriage and Family Counseling.** (3:2:2) Prerequisites: CDFR 445, 540. Hoopes, Mead, Scoresby
Application of principles of systems theory to develop strategies of intervention for use with marriages and families.
- 650A,B. Practicum in Family Counseling.** (3:2:2-4) Prerequisites: CDFR 540 and consent of instructor. Allred, Hoopes
Experience in organization and administration of family consultation with (a) young children and (b) adolescents.
- 655A,B. Practicum in Marriage Counseling.** (4:1:6) Prerequisites: CDFR 540 and consent of instructor. Hoopes, Mead, Scoresby
Supervised experience and sensitivity training in counseling of (a) marital dyads and (b) groups of marital dyads.
- 660. Dynamics of Parent-Child Interaction.** (2:1:2) Rollins
Development and testing of conceptual models of parent-child interaction.
- 661. Dynamics of Family Interaction.** (2:2:0) Prerequisites: CDFR 360, 460. Burr, Moss
- 662. Dynamics of Marital Interaction.** (2:2:0) Prerequisite: CDFR 460. Burr, Mead, Rollins
Systematic study of the research and theory of man-woman relationships in marriage.
- 663. Critical Problems in Family Life.** (2:2:0) Prerequisite: CDFR 361. Cannon
- 665. The Premarital Dyad.** (2:2:0) Prerequisite: CDFR 560. Cannon
Advanced seminar on theories and research related to premarital relationships.
- 667. Problems of Teaching Marriage and Family Relationships in College.** (2:2:0) Cannon, Moss
- 685. Developmental Use of Play Experiences.** (2:2:0) Prerequisite: consent of instructor.
- 691R. Seminar in Child Development.** (1-2:1-2:0 ea.)
- 692R. Seminar in Family Relationships.** (1-2:1-2:0 ea.)
- 696R. Advanced Research Methodology.** (2:1:2 ea.) Prerequisites: CDFR 596R; Stat. 554. Burr, Rollins, Vance
Application of principles of descriptive and experimental research methods, measurements, and multivariate analysis to research problems in child development-family relationships.
- 697R. Independent Research.** (1-3:1-3:0) Prerequisites: CDFR 596R; Stat. 554.
- 699. Thesis for Master's Degree.** (6-9:Arr.:Arr.)
- 740. Advanced Theories of Marriage and Family Counseling.** (3:3:0) Prerequisite: CDFR 540. Mead, Scoresby
- 749. Supervision in Marriage and Family Counseling.** (3:2:2) Prerequisites: CDFR 540, 649. Hoopes, Scoresby
Analysis and practice of techniques in the supervision of marriage and family counselors.

- 755, 756. Advanced Practicum in Marriage and Family Counseling.** (4:1:6-10 ea.)
Prerequisites: CDFR 740 and consent of instructor. Allred, Scoresby
- 760. Concepts and Theories of Marriage and the Family.** (3:3:0) Burr, Moss, Rollins
- 791R. Seminar in Child Development.** (1-2:1-2:0 ea.) Prerequisite: Ph.D. candidate in child development.
- 792R. Seminar in Family Relationships.** (1-2:1-2:0 ea.)
- 793R. Seminar in Marriage and Family Counseling.** (1-2:1-2:0 ea.)
- 794. Special Topics in Child Development.** (1-2:1-2:0)
- 795. Special Topics in Family Relationships.** (1-2:1-2:0)
- 799. Dissertation for the Ph.D. Degree.** (Arr.)

Communications

Professors: Bradley, Rich (graduate coordinator, F-563 HFAC), Smith.

Associate Professors: Barney, Barrus, Beckham, Burnett, Haroldsen (chairman, D-501 HFAC), Richards.

Program: Master of Arts (M.A.).

Application Consideration Dates: March 1, June 1, and November 1 each year.

Entry Times: Any regular registration.

Master of Arts

Prerequisites: A bachelor's degree in communications or allied fields or the equivalent; statistics. Professional experience in the area of communications is highly desirable. Professional competence in written and spoken English is necessary.

Minors Permissible: Option I or Option II.

Requirements: Minimum of 24 semester hours plus thesis (6-hr. min.—699).

Required Courses: Comms. 610, 611.

The program is designed to prepare qualified students for responsible and creative leadership as mass communication specialists or as teachers in the field. It emphasizes general studies which have common application to a number of professional specializations, including newspaper and magazine editing and publishing, commercial broadcasting, educational broadcasting, advertising, public relations, and communications research.

Students desiring to complete a graduate minor in communications should consult the department chairman or graduate coordinator regarding a recommended program of study.

Courses

- 335. Public Relations.** (3:3:0) Prerequisite: Comms. 211 or consent of instructor. Barney, Bradley, Smith
- Philosophy and practice of public relations in business, governmental, educational, and other institutions. Study of publics, media, methods, press relations, and publicity.

336. **Public Relations Case Studies.** (2:2:0) Barney, Beckham
Case studies in public relations. Case studies selected from a wide range of actual public relations problems which have confronted business, governmental, educational, and service institutions.
340. **Broadcast News.** (3:2:4) Prerequisites: Comms. 255, 312. Recommended: Comms. 312, 372.
News preparation and production of newscasts and public affairs programs. Consideration of interviews, documentaries, commentaries, editorials, and special events. Practical and lab experience provided.
371. **Introduction to the Motion Picture.** (2:2:1) Prerequisite: Physics 177 or equivalent.
Introduction to documentary film theory, using films to illustrate technique and content. Overview of communication aspect of the cinema.
373. **Motion Picture Writing.** (3:3:0) Prerequisite: Comms. 211. S. Whitaker
Fundamentals of screen script writing, from synopsis through screen treatment to final shooting script; analysis of theme and maturation action by reviewing films; aesthetics and script mechanics treated.
420. **Editorial and Interpretive Writing.** (3:2:3) Prerequisite: Comms. 312 or consent of instructor. Burnett
Study of the opinion and interpretative functions of the mass media of communication. Assignments in editorial writing and depth reporting.
427. **Magazine Writing.** (3:3:0) Prerequisite: Comms. 211 or consent of instructor.
Planning and writing nonfiction articles for sale to periodicals. Analysis of magazine markets and criticism of articles written in the course.
435. **Public Relations Research and Projects.** (3:3:0) Prerequisite: Comms. 335. Bradley
Observation and understanding of the public relations process; fact finding, planning, and evaluating social interrelationships; individual projects in public relations campaigns.
439. **Advertising Media and Campaigns.** (3:3:0) Prerequisites: Comms. 331, 333. G. Barrus
Research and planning of advertising campaigns as related to national and local objectives; media selection and budgeting; individual project in production of an advertising campaign.
444. **Broadcast Sales Administration.** (2:2:lab. incl.) Prerequisites: Comms. 230, 255. Beckham
Designed to develop the student's understanding of the complex interrelationships that are involved among various departments in order to handle professionally the sales administration of a broadcast facility.
449. **Broadcast Programs and Audiences.** (3:3:0) Prerequisites: Comms. 346, 347. Rich
Observation and analysis of basic program forms used in radio and television; examination of effective program structure and appeals; consideration of audience situation and measurement.
456. **Television Operations and Directing.** (3:3:3) Prerequisite: Comms. 346. Recommended: Sp. and Dram. Arts 460.
Theories and techniques of television directing.
458. **Broadcasting and Film Performance.** (2:1:3) Prerequisites: Comms. 255; Sp. and Dram. Arts 121 (section for broadcasting majors), 123.
Laboratory and practical experience in performance of various types of broadcast and film productions; emphasis on performing under the disciplines of the studio setting.
480. **Senior Seminar.** (3:3:0) Prerequisites: Comms. 101 and senior standing.
Analysis of contemporary practices and problems of the mass media as social and business institutions; introduction to communications research.

510. **Mass Media Administration.** (2:2:0) Prerequisite: Comms. 312 or 439 or 449. Beckham
Problems of organization and administration for newspapers, magazines, radio stations, and television stations.
526. **School Yearbook Production.** (2:2:0)
Planning and supervising production of school yearbooks, including copy, illustration, layout, printing, binding, and business management.
528. **Magazine Editing and Publishing.** (2:2:0) Prerequisite: Comms. 312.
Principles of layout and design for magazines and business publications. Contemporary practices in content and production.
550. **Problems and Practices in Educational Television and Radio.** (2:2:0) Prerequisite: advanced standing in communications or graduate education. Rich
Current problems and practices in the utilization and administration of television and radio in education and other noncommercial applications.
556. **Advanced Program Development and Production.** (2:1:3) Prerequisites: one or more of Comms. 340, 373, 420, 451 (or equivalent) plus undergraduate supporting field requirements.
Planning, production, and evaluation of documentary and public-affairs informational programs for broadcast. Experimentation in design, selection, and organization of content.
580. **Comparative World Communication Systems.** (2:2:0)
Barney, G. Barrus, Burnett, Haroldsen
Mass media systems in developing, authoritarian, and free nations. Relationship of these systems to government.
581. **International Communication Problems.** (2:2:0)
Barney, G. Barrus, Burnett, Haroldsen
An examination of the cultural, physical, and governmental barriers to the flow of information between nations. Role of the press in foreign policy. International propaganda.
610. **Communication Theory.** (3:3:0) Recommended: one or more courses in philosophy, psychology, and sociology. Rich
A study of the historical and philosophical development of communications theory, with special application to problems of the mass media.
611. **Research Methods in Mass Communication.** (2:2:0) Prerequisite: Stat. 221, or Psych. 370, or Sociol. 524. Bradley, Haroldsen, Smith
Research techniques in communication fields, including readership, readability, content analysis, and audience measurement. Introduction to thesis writing.
615. **Propaganda, Public Opinion, and Communications.** (3:3:0)
Barney, Burnett, Smith
Roles of the mass media as channels of propaganda and influences upon public opinion. Effects of public opinion on mass communication.
617. **Mass Communications and Government.** (3:3:0) Prerequisite: Comms. 307 or Pol. Sci. 361 or 563. Burnett
An examination of the contemporary relationship between government and the mass media, with attention to the philosophical and historical basis for regulation in light of constitutional guarantees.
620. **Communication and Information Technologies.** (2:2:0) Prerequisite: graduate standing.
Systems and technologies for encoding, transmitting, processing, and decoding information by electronic-mechanical means; analysis of computer use in new methods of interchanging print and other messages.
630. **Advertising Planning and Research.** (2:2:0) (Offered 1972-73 and alternate years) Prerequisite: Comms. 439. Barrus
An analysis of methods employed to measure the effectiveness of advertising, with emphasis on pretesting techniques for advertising campaigns.

- 690. Seminar in Mass Communication.** (1:1:0)
- 691, 692. Special Studies in Communication.** (1-3:Arr.:Arr. ea.)
Individual work on approved problems not leading to a thesis. Projects must be approved before registration.
- 694. Readings in Mass Communication.** (1-2:Arr.:Arr.) Prerequisite: consent of instructor.
- 699. Thesis for Master's Degree.** (6-9:Arr.:Arr.)

Economics

Professors: Bateman, Clark, Crockett, Davies (graduate coordinator, 310 JKB), Doxey, Nelson.

Associate Professors: Dutton, Rickenbach, Wimmer (chairman, 302 JKB).

Assistant Professors: Foster, Koller, Parsons, Pritchett.

Program: Master of Science (M.S.).

Entrance Examination Required: Graduate Record Examination (GRE), with advanced examination in economics. Students may be required to take special placement examinations in the prerequisite subject matter areas.

Application Consideration Dates: As received until June 15 for Fall Semester, November 1 for Winter Semester, February 25 for Spring Term, and May 1 for Summer Term.

Entry Times: Any regular registration.

Master of Science

Prerequisites: 6 semester hours of intermediate economic theory, 3 semester hours in principles of statistics, and an introductory calculus course. D credit is not acceptable.

There are three master's programs. Courses listed below and taken as an undergraduate cannot be repeated for credit, but another course must be substituted.

Program I - Ph.D. Preparation

Minors Permissible: Option II only.

Requirements: 33 semester hours, major research paper.

Required Courses: Econ. 511, 512, 588, 589; one of the following two series: Stat. 421, 422, or 433, 434; one of the following: Math. 385 or 243.

Program II - Junior College Teaching

Minors Permissible: Normally a continuation of undergraduate minor or major; Option II.

Requirements: 35 semester hours, major research paper.

Required Courses: Econ. 330 or 574, 511, 512, 515; Ed. 640, 642, 644, or a secondary teaching certificate.

Program III - General Degree

Minors Permissible: Option I or Option II.

Requirements: 24 semester hours plus thesis.

Required Courses: Econ. 511, 512, 515, 588; English 99.

Courses

- 501R. Current Economic Policies and Problems.** (2-3:Arr.:Arr. ea.) Davies, Nelson
- 511. Advanced Theory of Income, Employment, and the Price Level.** (3:3:0)
Prerequisites: Econ. 311, 312; Math. 112 or 109 or consent of instructor.
Clark, Dutton, Foster, Parsons
- 512. Advanced Price Theory.** (3:3:0) Prerequisites: Econ. 302 or 312; Math. 109 or 112 or equivalent. Koller, Pope, Pritchett, Rickenbach, Wimmer
- 515. Seminar in History of Economic Thought.** (3:3:0) Prerequisites: Econ. 315 or equivalent. Wimmer, Clark, Crockett
- 530. Advanced Economic Development.** (3:3:0) Prerequisites: Econ. 311 and 312 or equivalent. Recommended: Econ. 488 or 588. Bateman, Koller
- 535. Economic Problems of Asia.** (3:3:0) Prerequisites: Econ. 311 and 312 or consent of the instructor.
- 553. Theory of Money and Banking.** (3:3:0) Prerequisites: Econ. 311 and 312 or equivalent. Dutton, Foster, Parsons
- 558. Theory of International Trade and Finance.** (3:3:0) Prerequisites: Econ. 311, 312, or equivalent. Recommended: Math. 112. Bateman, Doxey
Foster, Pope
- 563. Economics of the Labor Market.** (2:2:0) Prerequisites: Econ. 111, 112, 361 or equivalent. Crockett, Davies
- 574. American Economic Development.** (3:3:0) Prerequisites: Econ. 311 and 312. Pope, Pritchett, Wimmer
- 575. Theory of Public Finance.** (3:3:0) Prerequisite: Econ. 312 or equivalent. Parsons, Rickenbach, Wimmer
- 576. Industrial Organization and Public Policy.** (3:3:0) Prerequisite: Econ. 302 or 312. Koller
- 588. Econometrics.** (3:3:0) Prerequisites: Econ. 311 and 312; Stat. 321; or equivalent. Bateman, Dutton
- 589. Advanced Mathematical Economics.** (3:3:0) Prerequisites: Econ. 311, 312; Stat. 321 or 221; Math. 112 or equivalent. Dutton, Pritchett
- 590R. Advanced Economic Problems.** (1-3:Arr.:Arr. ea.) Prerequisites: Econ. 311 or 312, or equivalent.
- 597R. Research.** (1-3:Arr.:Arr. ea.)
- 611. Seminar in Macroeconomic Theory.** (2:2:0) Prerequisites: Econ. 511 and 512 or consent of instructor. Dutton, Parsons
- 612. Seminar in Microeconomic Theory.** (3:3:0) Prerequisites: Econ. 512 or consent of instructor. Dutton, Pritchett
- 689. Seminar in Mathematical Economics.** (3:3:0) Prerequisites: Econ. 311, 312; Stat. 321 or 221; Math. 112 or equivalent. Dutton, Pritchett
- 691. Seminar in Economic History.** (2:2:0) Prerequisite: Econ. 574. Doxey, Pope, Wimmer
- 693. Seminar in Comparative Economic Systems.** (2:2:0) Prerequisites: Econ. 311, 312, or equivalent. Koller, Nelson
- 694. Seminar in Labor Economics and Labor Relations.** (2:2:0) Prerequisite: Econ. 361 or consent of instructor. Crockett, Davies
- 695. Seminar in Urban Economics.** (3:3:0) Prerequisites: Econ. 311, 312, or equivalent. Nelson, Rickenbach

697R. Research. (1-3:Arr.:Arr. ea.)

699. Thesis for Master's Degree. (6-9:Arr.:Arr.)

Education: Educational Administration

Professors: Burrup, Christensen, Clarke, Morrill, Ovard, Smith (chairman, 207C MCKB), Van Alfen.

Associate Professors: Cottrell, Harms, Hyatt.

Programs: Master of Education (M.Ed.), Sixth-Year Specialist (Ed.Sp.), Doctor of Education (Ed.D.).

Entrance Examination Required: Graduate Record Examination (aptitude and advanced test in education).

Application Consideration Dates: Same as Graduate School deadlines.

Entry Times: Any regular registration.

Master of Education

Prerequisites: A valid teaching credential and a minimum of one year of teaching experience.

Fields: Elementary school administration, secondary school administration.

Minors Permissible: Any approved minor; Option II.

Requirements: Minimum of 36 semester hours (including a minimum of 8 semester hours outside the College of Education); a written comprehensive examination. An oral comprehensive may be required.

Residence: At least one full-time registration must be taken on the Brigham Young University campus.

Credit for Previous Work: Credit earned in compliance with state certification or renewal requirements must be evaluated and approved by the student's sponsor in order to be applied toward the total credit hour requirements for the master's degree.

Required Courses: Consult departmental brochure.

This program is designed to prepare public school administrators for state certification at the elementary and secondary levels.

Sixth-Year Specialist

Prerequisites: A valid teaching credential, a minimum of two years of teaching experience, and a master's degree.

Fields: Elementary school administration, secondary school administration, general school administration, supervision.

Minors Permissible: Any approved minor.

Requirements: Minimum of 60 semester hours (including a minimum of 10 semester hours outside the College of Education); a field project (6-hr. min.—699).

Residence: At least two full-time registrations must be completed on the Brigham Young University campus.

Credit for Previous Work: Credit earned in a recognized master's degree program may be applied toward the total credit hour requirement for the Sixth-Year Specialist degree. Credit earned in compliance with state certification or renewal requirements must be evaluated and approved by the student's advisory committee in order to be applied toward the total credit hour requirements for the Sixth-Year Specialist degree.

Required Courses: Consult departmental brochure.

This program is designed to prepare public school administrators and supervisors for state certification at the elementary and secondary levels.

Doctor of Education

Prerequisites: A valid teaching credential, a minimum of two years of professional experience in education, and a master's degree.

Fields: Elementary school administration, secondary school administration, general school administration, junior college administration.

Minors Permissible: Any approved minor.

Requirements: Minimum of 75 semester hours (including a minimum of 12 semester hours outside the College of Education); proficiency in statistics; a field study (12-hr. min.—798).

Residence: At least two consecutive full-time summer sessions must be taken on the Brigham Young University campus, with an intervening supervised field experience of 5 semester hours for each of two semesters; or two consecutive full-time semesters on the Brigham Young University campus beyond the master's degree.

Credit for Previous Work: Credit earned in a recognized master's or Sixth-Year Specialist degree program may be applied toward the total credit hour requirement for the doctorate. Credit earned in compliance with state certification or renewal requirements must be evaluated and approved by the student's advisory committee in order to be applied toward the total credit hour requirement for the doctorate.

Required Courses: Consult departmental brochure.

This program is designed to prepare public school administrators for service at the elementary, secondary, and junior college levels.

Education: Educational Psychology

Professors: Bauer, Black, Downing, Harris, Jensen.

Associate Professors: Crandell, Goodman, B. Harrison, Kelly, Merrill, Moses, Pinegar, Snow, Van Mondfrans, Wilson.

Assistant Professors: Bingham, Buckner, Chamberlain, Gale (chairman, 180 CHLC), Hammond, G. Harrison, Heaps, Hendrix, Johnson, Thomas, Walton, Winward, Wootton.

Programs: Master of Education (M.Ed.), Master of Arts (M.A.), Sixth-Year Specialist (Ed.Sp.), Doctor of Education (Ed.D.), Doctor of Philosophy (Ph.D.).

Entrance Examinations Required: Graduate Record Examination (verbal, quantitative, and advanced tests in education) and other area tests as determined by area of study.

Application Consideration Dates: Same as Graduate School deadlines.

Entry Times: Any regular registration. School psychology majors, Fall Semester only.

Master of Education

Prerequisites: A valid teaching credential and/or appropriate professional experience as determined by major area of study.

Fields: Counseling and guidance, general educational psychology, instructional media, school psychology, special education.

Minors Permissible: Any approved minor; Option II.

Requirements: Minimum of 36 semester hours (including a minimum of 8 semester hours outside the College of Education); a written comprehensive examination. An oral comprehensive may be required.

Residence: At least one full-time registration must be taken on the Brigham Young University campus.

Credit for Previous Work: Credit earned in compliance with state certification or renewal requirements must be evaluated and approved by the student's sponsor in order to be applied toward the total credit hour requirement for the Master of Education degree.

Required Courses: Consult departmental brochure.

Master of Arts

Prerequisites: A valid teaching credential and/or appropriate professional experience as determined by major area of study.

Fields: Counseling and guidance, general educational psychology, instructional psychology, school psychology, special education.

Minors Permissible: Any approved minor; Option II.

Requirements: Minimum of 27 semester hours plus thesis (6-hr. min.—699).

Residence: At least one full-time registration must be taken on the Brigham Young University campus.

Credit for Previous Work: Credit earned in compliance with state certification or renewal requirements must be evaluated and approved by the student's sponsor in order to be applied toward the total credit hour requirements for the Master of Arts degree.

Required Courses: Consult departmental brochure.

Sixth-Year Specialist

Prerequisites: A valid teaching credential, a minimum of two years of teaching experience, and a master's degree.

Fields: Counseling and guidance, special education.

Minors Permissible: Any approved minor.

Requirements: Minimum of 66 semester hours (including a minimum of 10 semester hours outside the College of Education); a field project (6-hr. min.—699).

Residence: At least two full-time registrations must be completed on the Brigham Young University campus.

Required Courses: Consult departmental brochure.

Doctor of Education

Prerequisites: A valid teaching credential, a minimum of two years of professional experience in education, and a master's degree.

Fields: Counseling and guidance, educational psychology, special education.

Minors Permissible: Any approved minor.

Requirements: Minimum of 75 semester hours (including a minimum of 12 semester hours outside the College of Education); proficiency in statistics; a field study project (12-hr. min.—798).

Residence: At least two consecutive full-time summer sessions must be taken on the Brigham Young University campus, with an intervening supervised field experience of 5 semester hours for each of two semesters; or two consecutive full-time semesters on the Brigham Young University campus beyond the master's degree.

Required Courses: Consult departmental brochure.

Doctor of Philosophy

Prerequisites: A master's degree in education or psychology or the equivalent.

Fields: Counseling and guidance, educational psychology, instructional psychology, special education.

Minors Permissible: Any approved minor.

Requirements: Minimum of 24 semester hours plus thesis (18-hr. min.—799); satisfaction of tool subject prerequisites.

Required Courses: Consult departmental brochure.

Education: Elementary Education

Professors: Berryessa (chairman, 204 MCKB), Daines, Sucher.

Associate Professors: Allred, Bishop, Clark, Cutler, Harmon, Ord, Winterrose.

Assistant Professors: Dunn, Moore, Wade, Wasden, Young.

Programs: Master of Education (M.Ed.), Master of Arts (M.A.), Sixth-Year Specialist (Ed.Sp.), Doctor of Education (Ed.D.).

Entrance Examination Required: Graduate Record Examination (aptitude and advanced test in education).

Application Consideration Dates: June 1, December 1, April 1.

Entry Times: Any regular registration.

Master of Education

Prerequisites: A valid elementary teaching credential.

Fields: Elementary curriculum and instruction, reading specialist.

Minors Permissible: Any approved minor; Option II.

Requirements: Minimum of 36 semester hours; a written comprehensive examination. An oral comprehensive may be required.

Residence: At least one full-time registration must be taken on the Brigham Young University campus.

Credit for Previous Work: Credit earned in compliance with state certification or renewal requirements must be evaluated and approved by the student's

sponsor in order to be applied toward the total credit hour requirements for the Master of Education degree.

Required Courses: Consult departmental brochure.

Master of Arts

Prerequisite: A valid elementary teaching credential.

Fields: Elementary curriculum and instruction, reading specialist.

Requirements: Minimum of 33 semester hours, including 18 hours in the major field and 6 in related fields; a final oral examination.

Residence Requirements: At least one full-time registration must be taken on the Brigham Young University campus.

Credit for Previous Work: Credit earned in compliance with state certification or renewal requirements must be evaluated and approved by the student's advisory committee in order to be applied toward the total credit hour requirements for the Master of Arts degree.

Required Courses: Detailed description of the Master of Arts program and the general requirements of the department are available in 201 McKay Building.

Sixth-Year Specialist

Prerequisites: A valid elementary teaching credential, a minimum of two years of teaching experience, and a master's degree.

Field: Elementary curriculum and instruction.

Minors Permissible: Any approved minor; Option II.

Requirements: Minimum of 60 semester hours (including a minimum of 10 semester hours outside the College of Education); a field project (6-hr. min.—699).

Residence: At least two full-time registrations must be completed on the Brigham Young University campus.

Credit for Previous Work: Credit earned in compliance with state certification or renewal requirements must be evaluated and approved by the student's advisory committee in order to be applied toward the total credit hour requirements for the sixth-year specialist.

Required Courses: Consult departmental brochure.

Doctor of Education

Prerequisites: A valid elementary teaching credential, a minimum of three years of professional education experience, and a master's degree.

Field: Elementary curriculum and instruction.

Minors Permissible: Any approved minor.

Requirements: Minimum of 75 semester hours (including a minimum 12 semester hours outside the College of Education); proficiency in statistics; a field study (18-hr. min.—799).

Residence: At least two consecutive full-time summer sessions must be taken on the Brigham Young University campus, with an intervening supervised field experience of 5 semester hours for each of two semesters; or two consecutive full-time semesters on the Brigham Young University campus beyond the master's degree.

Credit for Previous Work: Credit earned in compliance with state certification or renewal requirements must be evaluated and approved by the student's

advisory committee in order to be applied toward the total credit hour requirement for the Doctor of Education degree.

Required Courses: Consult departmental brochure.

Education: Secondary Education and Foundations

Distinguished Professor: Romney.

Professors: Alley, Asay, Baird, Belt.

Associate Professors: Holder, Muse, Wilcox, Wolfgramm.

Assistant Professors: Allred (chairman, 111 MCKB), Webb.

Programs: Master of Education (M.Ed.), Sixth-Year Specialist (Ed.Sp.), Doctor of Education (Ed.D.).

Entrance Examination Required: Graduate Record Examination (aptitude and advanced test in education).

Application Consideration Dates: Same as Graduate School deadlines.

Entry Times: Any regular registration.

Master of Education

Prerequisite: A valid secondary teaching credential.

Fields: Secondary curriculum and instruction, comparative and international education.

Minors Permissible: Any approved minor; Option II.

Requirements: Minimum of 36 semester hours (including a minimum of 8 semester hours outside the College of Education); a written comprehensive examination. An oral comprehensive may be required.

Residence: At least one full-time registration must be taken on the Brigham Young University campus.

Credit for Previous Work: Transfer credit will be evaluated by the department from an official transcript in determining equivalency and relevancy. This includes credit earned in compliance with state certification or renewal requirements.

Required Courses: Consult departmental brochure.

Sixth-Year Specialist

Prerequisites: A valid secondary teaching credential, a minimum of two years of successful teaching experience, and a master's degree.

Field: Secondary curriculum and instruction.

Minors Permissible: Any approved minor.

Requirements: Minimum of 60 semester hours (including a minimum of 10 semester hours outside the College of Education); a field project (6-hr. min.—699).

Residence: At least two full-time registrations must be completed on the Brigham Young University campus.

Credit for Previous Work: Transfer credit will be evaluated by the department from an official transcript in determining equivalency and relevancy. This

includes credit earned in compliance with state certification or renewal requirements.

Required Courses: Consult departmental brochure.

Doctor of Education

Prerequisites: A valid secondary teaching credential, a minimum of two years of successful professional education experience, and a master's degree.

Field: Secondary curriculum and instruction.

Minor: Any approved minor.

Requirements: Minimum of 75 semester hours (including a minimum of 12 semester hours outside the College of Education); proficiency in statistics; a field study project (12-hr. min.—798).

Residence: At least two consecutive full-time summer sessions must be taken on the Brigham Young University campus, with an intervening supervised field experience of 5 semester hours for each of two semesters; **or** two consecutive full-time semesters on the Brigham Young University campus beyond the master's degree.

Required Courses: Consult departmental brochure.

Courses

- 500. **Fundamentals of Adult Education.** (3:3:0) Prerequisite: student teaching, teaching certificate, or departmental approval.
- 506. **Instructional Media in the School Program.** (3:2:3)
- 510. **Media Production Techniques.** (2:1:3) Prerequisite: Ed. 506.
- 514R. **Analysis of In-Service Problems.** (1-3:1-3:1 ea.)
- 520. **Photography in Instruction.** (2:1:3) Prerequisites: Ed. 506; Comms. 363 or equivalent.
- 524. **Art and Graphic Processes in Instruction.** (3:2:3) Prerequisite: Ed. 506 or consent of instructor.
- 526. **Instructional Use of Audio Programs.** (2:1:3)
- 533. **Kindergarten Education.** (2:2:0) Prerequisite: CDFR 321 or consent of instructor.
- 534. **Innovative Practices in the Elementary School.** (3:3:1)
- 536. **Secondary Curriculum and Methods: Introduction.** (3:3:0)
- 547. **Foundations in Reading.** (3:3:0)
- 549. **Directed Observation in the Schools.** (2:0:4)
- 550. **Introduction to Guidance Services.** (2:2:0) Home Study also.
- 551. **Research Design in Education.** (3:3:0)
- 560. **Educational Tests and Measurements.** (3:3:0) Prerequisite: Stat. 501 or 552 or Psych. 670.
- 562.* **Problems and Methods in the Education of the Visually Handicapped.** (3:3:0)
Prerequisites: Ed. 362, 373.
- 563.* **Advanced Braille.** (2:2:0)
Prerequisite: consent of instructor.

*Course in area of special education.

- 565.* **Problems in the Education of Emotionally Handicapped Children.** (3:3:1)
Prerequisite: Ed. 260; consent of instructor.
- 566.* **Problems in the Education of Orthopedically Handicapped Children.** (3:3:1)
Prerequisites: Ed. 260, 363.
- 568A,B,C,D,E.* **Observation and Participation in Special Education.** (2:1:4 ea.)
- 570.* **Problems in Education of Children with Neurological Impairment.** (3:3:0)
Prerequisite: Ed. 260 or consent of instructor.
- 572.* **Educational Evaluation of Communication Disabilities.** (2:2:4)
- 573.* **Workshop for Teachers of Bilingual Children.** (2:8 hrs./day for 2 weeks)
578. **Practicum for Elementary Teaching.** (2-4-8:2-4-8:5-10-20)
579. **Practicum for Secondary Teaching.** (2-4-8:2-4-8:5-10-20)
- 581R. **Proseminar in Instructional Psychology.** (3:3:0) Prerequisite: consent of coordinator.
601. **Comparative Current Educational Philosophy.** (3:3:0)
603. **Educational Classics and Contemporary Issues.** (3:3:0)
606. **History of Education in Europe and America.** (4:4:0)
607. **Education in a World Setting.** (2:2:0)
608. **Social Foundations of Education.** (3:3:0)
609. **Selection and Utilization of Audiovisual Materials.** (2:2:0)
610. **Designing and Producing Instructional Materials.** (2:2:1) Prerequisites: Ed. 510, and Psych. 460 or consent of instructor.
611. **Administering Instructional Media.** (2:2:0)
612. **Supervision of Student Teachers.** (2:2:0)
622. **Advanced Study in Childhood Education.** (2:2:0)
623. **Science in the Elementary School.** (2:2:0)
625. **Social Studies in the Elementary School.** (2:2:0)
626. **Classroom Procedures in the Elementary School.** (3:3:0)
627. **Reading in the Curriculum.** (2:2:0)
628. **Children's Literature.** (2:2:0) Prerequisite: Ed. 340.
631. **Curriculum Development in the Elementary School.** (3:3:0)
632. **Research and Literature in Reading.** (2:2:0) Prerequisites: Ed. 547 and 627.
633. **Language Arts in the Elementary School.** (2:2:0)
635. **Mathematics in the Elementary School.** (2:2:0) Prerequisite: Ed. 425 or equivalent.
636. **Secondary Curriculum and Methods: Design.** (3:3:0) Prerequisite: Ed. 536.
637. **Organization and Supervision of Reading Programs.** (2:2:0)
640. **The Junior College.** (3:3:0)
642. **Methods of College Instruction.** (3:3:0)

*Course in area of special education.

644. **Directed Teaching in College.** (2-4:4:0)
645. **Guidance Testing and Diagnosis.** (3:3:0) Prerequisites: Ed. 550; Stat. 552.
646. **Counseling Theory and Practice.** (3:3:0) Prerequisites: completion of or concurrent registration in Ed. 645; Psych. 450 or 550.
647. **Group Techniques for Counselors.** (3:3:0) Prerequisite: Ed. 646.
648. **Laboratory in Counseling Practice.** (1:0:2) Prerequisite: Ed. 550.
650. **Guidance Workshop.** (2:2:0) Prerequisite: Ed. 550.
651. **Informational Services in Guidance.** (3:3:0) Prerequisite: Ed. 550.
652. **Administration of Guidance Services.** (2:2:0) Prerequisite: Ed. 550.
653. **Student Personnel Services in Higher Education.** (2:2:0) Prerequisite: Ed. 550.
654. **Problems of the Elementary School Guidance Program.** (2:2:0)
655. **Laboratory in the Administration of Guidance Services.** (1:0:2) Prerequisite: Ed. 550.
656. **Advanced Educational Psychology.** (3:3:1) Prerequisite: Ed. 403.
- 657.* **Behavior Problems in the Schools.** (2:2:0) Prerequisite: Ed. 403.
659. **Basic Principles of Instructional Psychology.** (3:3:2) Prerequisite: Psych. 460 or equivalent.
660. **Research Design and Technical Writing in Education.** (3:3:0) Prerequisite: Stat. 552.
661. **Experimental Research in Instructional Psychology.** (3:2:4) Prerequisite: Stat. 554 or 501 or Psych. 670.
- 662.* **Curriculum Planning for the Mentally Retarded.** (2:2:1)
- 663.* **Curriculum and Methods for the Visually Handicapped.** (2:8 hrs./day for two weeks)
- 664.* **Workshop: Curriculum and Methods for the Gifted.** (2:8 hrs./day for two weeks)
- 665A,B,C.* **Diagnosis of Learning Disabilities.** (2:2:8-10 ea.) Prerequisites: Ed. 570, 572, or consent of instructor.
- 666.* **Special Education Services in Public Schools.** (2:2:0)
- 667.* **Diagnosis of Achievement Difficulties.** (3:2:2) Prerequisite: consent of instructor.
- 668.* **Remedial Teaching Techniques.** (3:2:2) Prerequisite: Ed. 667 and consent of instructor.
- 669.* **Guidance and Counseling for the Handicapped.** (2:2:0) Prerequisite: Ed. 260.
671. **Practicum in Testing and Counseling.** (5:2:10) Prerequisite: consent of instructor.
672. **Practicum in School Psychology.** (4:2:8) Prerequisite: consent of instructor.
673. **Practicum in Remedial Teaching.** (2-4:1-2:4-8) Prerequisite: consent of instructor.

*Course in area of special education.

- 674A,B. **Practicum in Learning Disabilities in the Classroom.** (2:2:8-10 ea.) Prerequisites: Ed. 570 and 572, or consent of instructor.
675. **Organization and Administration of Public Schools.** (3:3:0)
677. **Public School Finance.** (2:2:0)
678. **Elementary School Administration.** (3:3:0)
679. **Secondary School Administration.** (3:3:0)
- 680R. **Internship in Education.** (2-6:0:6-18 ea.) Prerequisite: consent of instructor eight weeks in advance of registration.
682. **The Teacher and School Administration.** (2:2:0)
685. **Supervision of Education.** (3:3:0)
687. **School Law.** (2:2:0)
- 690A,B,C,D. **Seminar.** (2:2:0 ea.)
- 691R. **Doctoral Admission Seminar.** (2:2:0 ea.) Prerequisite: consent of instructor.
- 693R. **Independent Readings.** (1-5:0:3-15 ea.)
696. **Independent Research.** (1-4:6-12:0)
698. **Field Project.** (2-4:Arr.:Arr.)
699. **Thesis for Master's Degree.** (6-9:Arr.:Arr.)
709. **Comprehensive Planning in Education.** (3:2:2)
712. **Media in Instructional Systems.** (3:3:0) Prerequisite: Ed. 609.
727. **Curriculum of the Public Schools.** (2:2:0)
731. **Systems Analysis and Research Development Management.** (3:3:0) Prerequisite: Comput. Sci. 131 or equivalent.
740. **Advanced Counseling Theory.** (2:2:0) Prerequisites: Ed. 646; Psych. 550.
741. **Practicum in Counseling.** (3:1:8) Prerequisite: consent of instructor.
751. **Research Design for Doctoral Dissertation.** (2:2:4) Prerequisite: Stat. 554 or equivalent.
760. **Problems of Elementary School Administration.** (2:2:0)
761. **Problems in Secondary School Administration.** (2:2:0)
762. **The Intermediate School.** (2:2:0)
765. **Business Administration of the Public School.** (3:3:0)
768. **Leadership Functions in Educational Administration.** (3:3:0)
769. **School-Community Relations.** (2:2:0)
770. **Organization and Administration of Continuing Education.** (2:2:0)
771. **Junior College Administration.** (2:2:0)
773. **Public School Building Programs.** (3:3:0)
775. **Educational Administrative Theory.** (2:2:0)
- 780R. **Internship in Education.** (2-8:0:6-24 ea.) Prerequisite: consent of instructor eight weeks in advance of registration.
- Christensen

- 790A,B,C. Seminar.** (2:2:0 ea.) Prerequisite: consent of instructor.
A—Administration and Curriculum; B—Special Services; C—Research and Field Services.
- 791A,B,C. Seminar.** (2:2:0 ea.)
A—Administration and Curriculum; B—Special Services; C—Research and Field Services.
- 796. Independent Research.** (2-4:6-12:0)
- 798. Dissertation for Ed.D. Degree.** (9)
- 799. Dissertation for Ph.D. Degree.** (Arr.)

ENGINEERING SCIENCES

Ph.D. Program in Engineering

Executive Committee: Cannon, Hanks (chairman, 234 FELB), Karren, Woodbury.

The Ph.D. program in engineering is an interdepartmental program administered by an executive committee of the engineering faculty. The course work offered in this program is listed separately under each of the four participating engineering departments (Chemical, Civil, Electrical, and Mechanical). The faculty consists of the graduate faculty of the four engineering departments.

The master's programs in engineering are administered by each department separately but are coordinated with the Ph.D. program for those who wish to continue beyond the master's level.

Program: Doctor of Philosophy (Ph.D.).

Entrance Examination Required: Qualifying examination. The student should contact the chairman of the Executive Committee for details.

Application Consideration Dates: Same as Graduate School deadlines.

Entry Times: Any regular registration.

Doctor of Philosophy

Prerequisites: B.S., BES, or M.E. degree in engineering or the equivalent. Tool preparation: satisfactory completion of Options I, II, or III as follows:

1. Stat. 501 (5) plus any one of Stat. 337 (3), Stat. 502 (5), Stat. 531 (3), or Stat. 534 (3).
2. Stat. 421 (3) plus Stat. 501 (5).
3. Stat. 321 (3) or 332 (2), Stat. 421 (3), plus any one of Stat. 422 (3), 432 (3), 433 (3), or 541 (3).
4. Comput Sci. 231 (3) and 580 (4).

or

Option IV: 21 semester hours of mathematics (beyond and excluding Math. 111 or its equivalent) and/or computer science in any combination.

Fields: Chemical Engineering: fluid mechanics, thermodynamics, chemical kinetics, high-pressure materials, transport processes, combustion.

Civil Engineering: structure and structural mechanics, water resources, and sanitary engineering.

Electrical Engineering: communications, computers, power systems, solid state electronics.

Mechanical Engineering: thermodynamics, heat transfer, gas dynamics, machine design, stress analysis, vibration, automatic controls, materials.

Requirements: Approximately 50 hours beyond bachelor's degree, plus dissertation (18-hr. min.—799); 12 semester hours of the minor in advanced mathematics in addition to tool requirements unless waived by committee.

Engineering: Chemical Engineering Science

Distinguished Professor: Hall.

Professors: Barker, Christensen, Pope, Smoot (chairman, 128 FELB).

Associate Professors: Clark, Coates, Glassett, Hanks (graduate coordinator, 234 FELB), Horton, Rogers.

Program: Master of Science (M.S.). (Students anticipating doctoral work in this area are referred to page 97 for details.)

Entrance Examinations Required: U.S. citizens: none. Foreign nationals: Graduate Record Examination (verbal, aptitude, and advanced engineering). At the department's discretion, a special entrance screening examination may be required.

Application Consideration Dates: U.S. citizens: as received. Foreign nationals: April 1 each year.

Entry Times: U.S. citizens (M.S. or Ph.D.), foreign nationals having M.S. degree and seeking Ph.D.: any semester or term. Foreign nationals (M.S. level): Fall Semester only.

Master of Science

Prerequisites: B.S. degree (or equivalent) in chemical engineering from an AIChE (American Institute of Chemical Engineering) accredited school. B.S. degree in other engineering, chemistry, or physics is acceptable for provisional admission.

Fields: Mass transfer, fluid mechanics, heat transfer, thermodynamics, chemical kinetics, process control, applied mathematics, high-pressure materials, nuclear engineering, environmental engineering.

Minors Permissible: Option I or Option II.

Requirements: Minimum of 24 semester hours plus thesis (6-hr. min.—699).

Required Courses: Chem. Eng. 673 (3), 677 (1), 681 (3), 691R (1—each semester); Chem. 561 (3).

For requirements of special programs, see departmental brochure.

Courses

582. **Introductory Nuclear Engineering.** (3:3:0) Prerequisites: Chem. 106 or 112; Math. 214; Physics 221. Barker, Rogers
Principles and application of nuclear reactor design.

583. **Nuclear Engineering.** (2:2:0) Prerequisite: Chem. Eng. 582. Barker, Rogers
Reactor design, including reactor physics, heat transfer, engineering materials, instrumentation, and control.

671. **Transport Processes in Reacting Flow Systems.** (3:3:0) (Offered on demand) Prerequisites: Chem. Eng. 673, 681; Math. 323; Chem. 561. Coates, Smoot
Kinetics and transport in reacting, multicomponent flow systems, with

application to complex reactor systems, free jets, particle-laden streams, plasmas, etc.

- 672. Advanced Fluid Mechanics and Rheology.** (3:3:0) (Offered on demand)
Prerequisites: Math. 645; Chem. Eng. 673. Hanks
Proper formulation of constitutive equations; non-Newtonian flow, stability, turbulence, drag reduction, nonisothermal flow, and heat transfer.
- 673. Transport Phenomena.** (3:3:0) Prerequisites: Chem. Eng. 476; Math. 323. Hanks, Smoot
General differential equations of conservation of mass, heat, and momentum. Transport coefficients; turbulent flow; interphase transfer, etc.
- 674. Advanced Thermodynamics and Calorimetry.** (2:2:0) (Offered on demand)
Prerequisite: Chem. 561. Christensen
Advanced thermochemistry, including application to measurements of heats of mixing, heat of reaction, equilibrium constant, etc.
- 675. Thermodynamics of Multicomponent Systems.** (3:3:0) (Offered on demand)
Prerequisite: Chem. 561. Christensen, Hanks
Thermodynamic analysis of nonideal multicomponent solutions, prediction of activities and fugacities, thermodynamic consistency of data, development of correlating equations.
- 676. Advanced Diffusional Operations.** (3:3:0) (Offered on demand) Prerequisites: Chem. Eng. 673; Chem. 561; Math. 323. Clark, Pope
General theory of differential and stagewise diffusional and separations operations; multicomponent distillation extraction, absorption; computer solution of complex problems; column design and instrumentation.
- 677. Creative Skills in Chemical Engineering.** (1:1:0) Barker, Horton
Application of creativity and prior course work to the solution of relevant open-end problems.
- 681. Kinetics and Catalysis.** (3:3:0) Prerequisite: Chem. Eng. 478. Horton, Pope
Application of fundamental theories of chemical kinetics and transport phenomena to the design of chemical reactors.
- 683. Advanced Plant Design and Economics.** (2:2:0) (Offered on demand) Prerequisite: Chem. Eng. 464. Glassett, Pope
Comprehensive design of chemical plants including feasibility and market surveys, economic evaluations, raw materials, plant layout, process design, instrumentation, materials of construction.
- 684. Advanced Process Dynamics and Control.** (2:2:0) (Offered on demand) Barker
Dynamics of chemical processes, the measurement of process variables, and the control of processes using feedback control, computer control, optimization, automation techniques.
- 688R. Special Problems.** (1-3:Arr.:Arr. ea.) (Offered on demand)
Investigation of problems of special interest.
- 691R. Seminar for Master's Students.** (1:1:0 ea.)
Technical presentations by graduate students, faculty members, and invited guests.
- 697R. Research for Master's Students.** (2-6:0:0 ea.)
- 699. Thesis for Master's Degree.** (6-9:Arr.:Arr.)
- **Chemistry 769. Selected Topics in Physical Chemistry.** (1-3:1-3:0) Hall
High-pressure phenomena.
- 788R. Selected Topics in Chemical Engineering.** (1-3:Arr.:Arr. ea.)
- 791R. Seminar for Doctoral Students.** (1:1:0 ea.)

797R. Research for Doctoral Students. (Arr. ea.)

799. Dissertation for Doctoral Students. (Arr.)

Engineering: Civil Engineering Science

Professors: C. Barton, J. Barton, Christiansen, Enke, Firmage (chairman, 107 FELB), Fuhrman, Jacobson, Karren, Rollins, Stutz.

Associate Professors: Budge, Wilkes, Wilson.

Assistant Professors: Durrant (graduate coordinator, 198 FELB), Merritt.

Programs: Master of Science (M.S.), Master of Engineering (M.E.). (Students anticipating doctoral work in this area are referred to page 97 for details.)

Entrance Examination Required: Graduate Record Examination required for applicants from non-ECPD (Engineers' Council for Professional Development) accredited schools.

Application Consideration Dates: May 1 for Fall Semester; same as Graduate School deadlines for other semester and terms.

Entry Times: Any regular registration.

Master of Science

Prerequisites: A bachelor's degree in civil engineering or its equivalent. (Students with other backgrounds will also be considered.)

Fields: Highways, water resources and sanitary engineering, soil mechanics and foundations, applied mechanics, structural mechanics, structural engineering.

Minors Permissible: Option I or Option II.

Requirements: Minimum of 25 semester hours plus thesis (6-hr. min.—699).

Required Course: Civ. Eng. 691R (1).

Master of Engineering

Prerequisites: A bachelor's degree in civil engineering or its equivalent. (Students with other backgrounds will also be considered.)

Fields: Highways, water resources and sanitary engineering, soil mechanics and foundations, applied mechanics, structural mechanics, structural engineering.

Minors Permissible: Option I or Option II.

Requirements: Minimum of 28 semester hours plus a project (3-hr. min.).

Required Course: Civ. Eng. 691R (1).

Courses

501. Advanced Mechanics of Materials. (3:3:0) (Interdepartmental) Prerequisite: Civ. Eng. 303.

Introduction to theories of elasticity, plasticity, and strain energy methods; stresses and strains in beams, curved members, rotating discs, thick cylinders, torsion and structural members.

502. Advanced Properties of Materials. (3:3:0) (Interdepartmental) Prerequisite: Civ. Eng. 305 or equivalent.

Mechanics of deformation and fracture of solids; mechanical behavior of

materials correlated with atomic scale mechanisms; creep, residual stresses, and fatigue.

- 503. Applied Elasticity.** (3:3:0) Prerequisites: Civ. Eng. 303; Math. 321.
Analysis of stress and strain; equations of equilibrium and compatibility; generalized Hooke's Law; energy theorems.
- 505. Concrete—Its Materials, Uses, and Properties.** (3:2:3) Prerequisite: Geol. 330.
Manufacture and testing of cements; concrete materials and concrete mix design; techniques of concrete handling, placing, and treatment; laboratory work.
- 507. Experimental Stress Analysis.** (3:2:3) Prerequisite: Civ. Eng. 303.
Experimental methods of stress determination and their application to static engineering problems. Mechanical gages; brittle lacquers; electric strain gages; photoelasticity and photostress techniques.
- 513. Photogrammetry.** (3:2:3) Prerequisite: Civ. Eng. 212.
Theory and application of the use of terrestrial and aerial photographs to produce maps; vertical and oblique photography and mapping procedures; stereoscopic viewing and measurements for relative position of objects in three dimensions; photo interpretation; sources of errors.
- 527. Matrix Methods in Structures.** (3:2:3) Prerequisite: Civ. Eng. 422.
Development of stiffness and flexibility matrices for statically determinate and indeterminate structures. Use of the digital computer.
- 528. Finite Element Analysis.** (3:3:0) Prerequisite: Civ. Eng. 527 or consent of instructor.
Development of finite elements for a continuum; applications using matrix algebra; consideration of plates, shells, and heat conduction using the digital computer.
- 531. Water Resources Engineering.** (3:2:3) Prerequisites: Civ. Eng. 431, 432.
Planning and basic design of hydroelectric, flood control, irrigation, and multipurpose projects involving the utilization of water resources; consideration primarily of hydraulic and hydrologic design elements.
- 543. Physico-Chemical Characteristics of Soils.** (3:3:0) Prerequisites: Chem. 106; Civ. Eng. 341.
Physico-chemical relationships in soils, including the structures of the clay minerals, properties of the electrical double layer, ion exchange phenomena, and soil moisture movement and equilibria.
- 550. Water Quality Management.** (3:3:0) Prerequisite: consent of instructor.
Philosophies, objectives, and methods of water quality management; impact of various uses on water quality; behavior of pollutants in receiving waters.
- 610. Theory and Design of Plates.** (3:3:0) Prerequisite: Civ. Eng. 303.
Theory and analysis of thin plates and plates of moderate thickness; membrane theory; anisotropic considerations.
- 612. Structural Stability.** (3:3:0) Prerequisite: Civ. Eng. 303.
Elastic and inelastic buckling of columns, analysis of beam columns, torsional-flexural buckling, and buckling of thin plates and cylindrical shells.
- 615. Structural Dynamics.** (3:3:0) Prerequisite: Civ. Eng. 304 or 527 or equivalent.
Matrix formulation of free and forced, damped and undamped, lumped parameter, and multiple degree-of-freedom linear systems. Approximate methods for nonlinear damped systems; applications to frameworks and beams.
- 620. Advanced Structures—Theory and Design.** (3:3:0) Prerequisites: Civ. Eng. 423, 424.
Advanced topics in structural theory and design: arches, frames, continuous structures on elastic supports, plastic design theory.

- 621. Thin Shell Structures.** (3:3:0) Prerequisites: Civ. Eng. 422, 424.
Theory and design methods related to domes, solid-plate, and hyper structures.
- 622. Design of Bridge Structures.** (3:2:3) Prerequisites: Civ. Eng. 341, 422, 423, 424.
Design of bridge structures: floor systems, composite and continuous beams and girders, trusses, piers, and abutments.
- 623. Prestressed Concrete.** (3:3:0) Prerequisites: Civ. Eng. 422, 424.
Basic theory of prestressed concrete, pre- and posttensioning methods. Details of design and fabrication, applications to continuous structures.
- 625. Design of Multistory Structures.** (3:2:3) Prerequisites: Civ. Eng. 341, 422, 423, 424, or consent of instructor.
Shear walls, floors, columns, frames, and foundations, using elastic and plastic methods. Frame response to lateral forces.
- 632. Advanced Hydrology.** (3:3:0) Prerequisites: Civ. Eng. 431, 432 or equivalent.
Theory and application of advanced hydrologic principles to engineering design and investigations.
- 633. Hydraulic Design of Water Control Structures.** (3:3:0) Prerequisite: Civ. Eng. 432.
Hydraulic and structural design of dams and appurtenant works and other water control structures.
- 634. Flow in Open Channels.** (3:3:0) Prerequisite: Civ. Eng. 332.
The theory of flows in artificial and natural open channels, and the application of that theory to practical problems.
- 641. Advanced Soil Mechanics.** (3:3:0) Prerequisites: Civ. Eng. 341, 442 or equivalent.
Advanced topics in soil mechanics including stress distribution in earth masses, the shearing strength of soils, consolidation theory, settlement analysis, stability of slopes, and the bearing capacity of soils.
- 642. Advanced Soil Mechanics Laboratory.** (2:0:6) Prerequisites: Civ. Eng. 341, 422, 641 or equivalent.
Advanced study in the technique of laboratory investigations of soils.
- 643. Earth and Rock-Fill Structures.** (3:3:0) Prerequisite: Civ. Eng. 341 or equivalent.
Design and construction of earth and rock-fill dams. Selection of dam-sites and materials; seepage and pore pressure studies; shearing strength data; stability analysis; construction controls.
- 644. Advanced Foundation Engineering.** (3:3:0) Prerequisite: Civ. Eng. 641.
Foundation engineering techniques of subsurface investigation, determination of the allowable soil pressures for footings, and the design of spread footings, raft formation, and pile foundation.
- 646. Flow of Fluids through Porous Media.** (3:3:0) Prerequisites: Civ. Eng. 332, 341.
Fluid flow in saturated and unsaturated anisotropic media. Darcy's Law and Navier-Stokes equations. Potential theory and conformal mapping; analogue solutions.
- 652. Design of Water Treatment Works.** (3:3:0) Prerequisites: Civ. Eng. 451; Chem. 223; Micro. 381; or equivalent.
Water purification and treatment for culinary, municipal, and industrial uses.
- 653. Design of Sewage Treatment Works.** (3:3:0) Prerequisites: Civ. Eng. 451; Chem. 223; Micro. 381 or equivalent.
Design of sewage disposal and treatment works.

- 654. Industrial Waste Treatment.** (3:3:0) Prerequisites: Civ. Eng. 451; Chem. 223; Micro. 381; or equivalent.
Treatment and disposal of industrial wastes; studies of basic industries and their waste problems.
- 655. Sanitary Engineering Analysis.** (2:0:6) Prerequisites: Civ. Eng. 451; Micro. 381; Chem. 223; Civ. Eng. 550; or equivalent.
Analytical techniques involved in chemical and biological analysis of inorganic constituents of water, sewage, and industrial wastes.
- 661. Traffic Engineering—Theory of Flow and Geometric Design.** (3:3:0) Prerequisite: Civ. Eng. 461 or equivalent.
Characteristics of motor-vehicle traffic; theory of traffic flow; freeway operations and traffic regulations; design of highways and parking facilities, at-grade intersections, interchanges, channelizations, parking lots and garages.
- 663. Pavement Design.** (3:3:0) Prerequisite: Civ. Eng. 461 or equivalent.
Properties and selection of pavement components, including soils, stabilized soil, base, subbase, subgrade, and bituminous materials. Design of rigid and flexible pavements.
- 691R. Civil Engineering Seminar.** ($\frac{1}{2}$:1:0 ea.)
- 694R. Selected Problems in Civil Engineering.** (1-3:Arr.:Arr. ea.)
- 697R. Research in Civil Engineering.** (2:Arr.:Arr. ea.) Prerequisite: consent of instructor.
- 698. Engineering Projects.** (3:Arr.:Arr.) Prerequisite: registration in Master of Engineering program.
Investigation, study, and presentation of a technical engineering report in civil engineering. The project must be approved by the graduate committee.
- 699. Thesis for Master's Degree.** (6-9:Arr.:Arr.)
- 794R. Selected Topics in Civil Engineering.** (1-3:Arr.:Arr. ea.)
- 797R. Research for Doctoral Students.** (Arr. ea.)
- 799. Dissertation for Doctoral Students.** (Arr.)

Engineering: Electrical Engineering Science

Professors: Berrett, Clegg, Jonsson, Losee (chairman, 175 FELB).

Associate Professors: Bowman, Chaston, Humpherys, Miner, Monson, Woodbury (graduate coordinator, 240B B-34).

Programs: Master of Science (M.S.), Master of Engineering (M.E.). (Students anticipating doctoral work in this area are referred to page 97 for details.)

Entrance Examinations Required: None.

Application Consideration Dates: May 15 and November 15.

Entry Times: Fall or Winter semesters only.

Master of Science

Prerequisites: B.S. degree at a recognized school (accredited by the Engineers' Council for Professional Development). If the school is not accredited, the student must submit results of the Graduate Record Examination (advanced test in engineering).

Fields: Communications, computers, power systems, solid state electronics.

Minors Permissible: Option II only.

Requirements: Minimum of 24 semester hours (including 6 hours in mathematics and/or statistics) plus thesis (6-hr. min.—699).

Required Courses: The following courses are normally required for the areas of specialization indicated:

Computer		Solid State Electronics	
Fall	Winter	Fall	Winter
Elec. Eng. 513	Elec. Eng. 623	Elec. Eng. 513	Elec. Eng. 551
Elec. Eng. 523	Elec. Eng. 524	Elec. Eng. 550	Elec. Eng. 552R
Other courses from Math.,		Elec. Eng. 552R	
Comput. Sci. and Elec. Eng.; Comput.			
Sci. 332 is a prerequisite.			
Power Systems		Communications	
Fall	Winter	Fall	Winter
Elec. Eng. 513	Elec. Eng. 532	Elec. Eng. 513	Elec. Eng. 561
Elec. Eng. 531	Elec. Eng. 533	Elec. Eng. 560	Elec. Eng. 567
Chem. Eng. 582		Elec. Eng. 567	
		Elec. Eng. 664	Elec. Eng. 665

Master of Engineering

Prerequisites: B.S. degree at a recognized school (accredited by the Engineers' Council for Professional Development). If the school is not accredited, the student must submit results of the Graduate Record Examination (advanced test in engineering).

Fields: Communications, computers, power systems, solid state electronics.

Minors Permissible: Option II only.

Requirements: 27 semester hours (including 6 hours in mathematics and/or statistics) plus a project (3-hr. min.—697R).

Required Courses: See listing under Master of Science for each field of interest.

Courses

411. **Feedback Concepts.** (3:3:0) Prerequisites: Civ. Eng. 304; Math. 321; either Elec. Eng. 431 and 442, or 302 and 304. Jonsson
412. **Advanced Circuit Analysis.** (3:3:0) Prerequisite: Elec. Eng. 311; completion of or concurrent registration in Math. 321, 322.
Analysis of linear and nonlinear electrical circuits.
431. **Electrical Energy Conversion.** (4:3:3) Prerequisite: Elec. Eng. 311.
Magnetic circuits, transformers, and energy conversion principles.
442. **Electronic Circuits and Devices II.** (4:3:3) Prerequisite: Elec. Eng. 341.
450. **Electrical Properties of Materials.** (2:2:0) Prerequisites: Elec. Eng. 360, 442. Woodbury
Electrical properties of crystalline solids.
513. **Linear Systems.** (3:3:0) Prerequisite: graduate standing or consent of instructor.
State-space and transform techniques in the analysis of linear systems.
517. **Digital and Sampled-Data Control Systems.** (3:3:0) (Offered 1973 and alternate years) Prerequisite: Elec. Eng. 411. Jonsson
521. **Computer Arithmetic Techniques and Microprogramming.** (3:3:0) Prerequisite: Elec. Eng. 320.

- 523. Digital Computer Design.** (3:3:0) Prerequisite: Elec. Eng. 210.
The operation and logical design of digital computers.
- 524. Switching Theory.** (3:3:0) Prerequisite: Elec. Eng. 523.
Analysis and synthesis of combinatorial and sequential switching circuits; their use in computation.
- 525. Advanced Switching and Logic Theory.** (3:3:0) Prerequisite: Elec. Eng. 320.
Fault diagnosis, multi-ports, advanced algorithms, computer-aided digital system design, iterative networks.
- 526. Telecomputing.** (3:3:0) Prerequisites: Elec. Eng. 320, 442.
Computer networks, input/output handling, digital data transmission techniques, synchronization, error coding, feedback communications, decision theory, likelihood, correlation, orthogonal signals.
- 528. Analog Computer Design.** (3:3:0) Prerequisite: Elec. Eng. 304 or 442.
Theory and operation of analog computer components; hybrid computation.
- 531. Power System Analysis I.** (3:3:0) Prerequisite: Elec. Eng. 302 or completion of or concurrent registration in Elec. Eng. 431.
Polyphase circuits, transmission line constants, power system representation, generalized circuit constants, symmetrical components, fault studies.
- 532. Power System Analysis II.** (3:3:0) Prerequisite: Elec. Eng. 531.
Characteristics of electric power system components; fault study consideration; introduction to power system stability.
- 533. Power Machinery and Equipment.** (3:3:0) Prerequisite: Elec. Eng. 431.
Transformers; synchronous, induction, and DC machines; other power system devices.
- 537. Advanced Control Machinery Laboratory.** (1:0:3) Prerequisite: Elec. Eng. 411.
Experiments with electrical machinery, control systems, and power distribution systems.
- 541. Switching, Timing, and Pulse Circuits.** (4:3:3) Prerequisite: Elec. Eng. 442.
Passive and active electronic circuits, with emphasis on nonlinear modes of operation.
- 542. Advanced Switching and Pulse Circuits.** (3:3:0) Prerequisite: Elec. Eng. 541.
Switching, shaping, memory, and function generation in electronic systems.
- 550, 551. Physical Electronics.** (3:3:0 ea.) Prerequisites: Physics 221 and senior or graduate standing. Recommended: Elec. Eng. 450.
Theory and applications of solid state electronic devices including Gunn and avalanche diodes, lasers, magnetic and acoustical devices.
- 552R. Semiconductor Laboratory.** (1-2:0:3-6 ea.) Prerequisite: completion of or concurrent registration in Elec. Eng. 450 or 550.
Experimental investigation of semiconductor materials, including basic measurements and construction of electronic devices.
- 560. Electromagnetic Engineering.** (3:3:0) Prerequisites: Elec. Eng. 360; concurrent registration in Elec. Eng. 567.
Applications of electromagnetic field theory to microwave components and systems.
- 561. Communication Circuits.** (3:3:0) Prerequisites: Elec. Eng. 360, 442; concurrent registration in Elec. Eng. 566.
Circuits and RF techniques used in communication systems.
- 564. Radar Systems.** (3:3:0) Prerequisites: Elec. Eng. 360, 442.
Study of major components constituting a radar, and development of system engineering concepts.

- 566. Communication Circuits Laboratory.** (2:0:6) Prerequisite: concurrent registration in Elec. Eng. 561.
Building and testing the circuits studied in Elec. Eng. 561.
- 567. Microwave Laboratory.** (1:0:3) Prerequisite: Elec. Eng. 560.
Building and testing microwave systems studied in Elec. Eng. 560.
- 597R. Special Topics in Electrical Engineering.** (3:3:0 ea.) Prerequisite: consent of instructor.
Content varies from year to year. Recent developments in electrical engineering.
- 598. Special Problems.** (1-2:Arr.:Arr. ea.) Prerequisite: consent of instructor.
- 617. Optimal Control Theory.** (3:3:0) (Offered 1973 and alternate years) Prerequisites: Elec. Eng. 411, 513.
Performance indexes and maximization techniques applied to control systems.
- 618. Nonlinear Analysis.** (3:3:0) Prerequisite: Elec. Eng. 411.
Nonlinear differential equations; problems of discrete systems; design in the phase plane; adaptive control systems; dynamic programming.
- 621. Computer Graphics and Real-Time Computation.** (3:3:0) Prerequisite: Elec. Eng. 320.
Graphic input/output systems for digital computers and on-line and real-time hybrid systems.
- 623. Advanced Digital Computers.** (3:3:0) Prerequisites: Elec. Eng. 523; Comput. Sci. 332; or equivalent.
Advanced theory and operation of digital computers and their design and application to engineering, scientific, and control problems.
- 645, 646. Microwave Devices.** (3:3:0 ea.) Prerequisite: Elec. Eng. 560.
Theory and design of passive and active microwave components.
- 661. Advanced Electromagnetic Fields.** (3:3:0) Prerequisite: Elec. Eng. 560.
Physical interpretation of electromagnetic fields. Mathematical methods of solving boundary value and other field problems.
- 663. Antenna Theory.** (3:3:0) Prerequisite: Elec. Eng. 360.
An advanced viewpoint of radiation, terminal, and distributed properties of antenna structures.
- 664, 665. Communication Theory.** (3:3:0 ea.) Prerequisite: graduate standing or consent of instructor.
Transmission through electric networks, periodic sampling, pulse modulation, analysis of information transmission systems, and noise considerations.
- 697R. Master of Engineering Project.** (3:Arr.:Arr. ea.) Prerequisites: graduate standing and consent of major professor.
One-semester project for Master of Engineering degree.
- 698R. Readings and Seminar.** (1:1:0 ea.) Prerequisite: graduate standing.
- 699. Thesis for Master's Degree.** (6-9:Arr.:Arr.) Prerequisites: graduate standing and consent of major professor.
- 791R. Seminar for Doctoral Students.** (1:1:0 ea.)
- 794. Selected Topics in Electrical Engineering.** (1-3:Arr.:Arr.)
- 797R. Research for Doctoral Students.** (Arr. ea.)
- 799. Dissertation for Doctoral Students.** (Arr.)

Engineering: Mechanical Engineering Science

Professors: Andersen, Cannon (graduate coordinator, 223-D FELB), Polve, Simonsen (chairman, 223-B FELB), Ulrich, Wille.

Associate Professors: Free, Heaton, Paxson, Warner.

Programs: Master of Science (M.S.), Master of Engineering (M.E.). (Students anticipating doctoral work in this area are referred to page 97 for details.)

Entrance Examinations Required: No special exams required of graduates of ECPD (Engineers' Council for Professional Development) accredited schools. Favorable consideration given to graduates of curriculums not accredited by ECPD who submit Graduate Record Examination scores in aptitude and advanced engineering tests. Also, for non-ECPD curriculum graduates, a screening exam is required after arrival to determine weaknesses that must be strengthened.

Application Consideration Dates: Same as Graduate School deadlines.

Entry Times: Any regular registration.

Master of Engineering

Prerequisites: Bachelor's degree in mechanical engineering or, with the consent of the department, an allied discipline.

Fields: Thermodynamics, heat transfer, gas dynamics, machine design, stress analysis, vibration, automatic controls, materials and manufacturing processes.

Minors Permissible: Option I and Option II.

Requirements: Minimum of 30.5 semester hours including a project (3-hr. min.—698).

Required Courses: Mech. Eng. 510, 540, 591R, and Math. 322, 323.

This program is designed to provide the breadth of work encountered by a practicing professional engineer. For Brigham Young University undergraduates, a pacing advantage is available as a "combined" or "MA-3 type" program that is entered at the beginning of the junior year. During the junior, senior, and fifth years, the graduate and undergraduate courses are intermingled with a registration of 16.5 semester hours allowed per semester when graduate courses are included. "Admission" to the combined program is allowed after the sophomore year if in the previous 60 hours of work the student has received a grade-point average of 2.5 or higher. (A 3.0 GPA is necessary, however, for all courses applied to the graduate degree.) "Registration" in the Graduate School occurs during the final year of work only.

Master of Science

Prerequisites: Bachelor's degree in mechanical engineering or, with the consent of the department, an allied discipline.

Fields: Thermodynamics, heat transfer, gas dynamics, machine design, stress analysis, vibration, automatic controls, materials and manufacturing processes.

Minors Permissible: Option I and Option II.

Requirements: Minimum of 30.5 semester hours including thesis (6-hr. min.—699R).

Required Courses: Mech. Eng. 591R and 6 hours of mathematics beyond the level of ordinary differential equations.

This is a research-type program designed for students who plan a research or development career in engineering.

Courses

(See also related courses in other engineering and physical science offerings.)

- **Civil Engineering Science 501. Advanced Mechanics of Materials.** (3:3:0)
(Interdepartmental) Prerequisite: Civ. Eng. 303.
- **Civil Engineering Science 502. Advanced Properties of Materials.** (3:3:0)
(Interdepartmental) Prerequisite: Civ. Eng. 305 or equivalent.
- 510. Fluid Mechanics II.** (3½:3:2) Prerequisites: Math. 321; Mech. Eng. 412.
Compressible flow; shock effects; Fanno and Rayleigh lines; generalized one-dimensional flow.
- 511. Intermediate Gas Dynamics.** (3:3:0) Prerequisite: Mech. Eng. 510.
Potential theory and Euler's equations. Supersonic and subsonic multi-dimensional flow. Method of characteristics, small perturbation theory, Hodograph theory. Theoretical airfoil coefficients, etc.
- 512. Boundary Layer Theory.** (3:3:0) Prerequisite: Mech. Eng. 412.
The stress tensor, Navier-Stokes equations, exact solutions for parallel flow, lubrication theory, Prandtl's equations, separation, Karman-Pohlhausen integral methods; applications.
- 515. Applied Aerodynamics and Flight Mechanics.** (3:3:0) Prerequisite: Mech. Eng. 322.
An integrated picture of modern applied aerodynamics up to and including performance, stability, and control of aerospace vehicles.
- 521. Advanced Thermodynamics.** (3:3:0) Prerequisite: Mech. Eng. 322.
Extended treatment of the fundamentals of thermodynamics, including transient conditions, direct energy conversion, and current topics.
- 522. Combustion.** (3:3:0) Prerequisite: Mech. Eng. 322.
Mass balance and chemical structure; chemical equilibrium and kinetics as applied to combustion; burning models—solids, liquids, and gases. Deflagration and detonation-type burning, properties of fuels and combustion hardware.
- 523. Statistical Thermodynamics.*** (2:2:0) Prerequisites: Mech. Eng. 321; Stat. 321.
Methods of statistical inference, Jaynes formalism, statistical treatment of perfect gases, discussion of thermal properties from a molecular (microscopic) point of view.
- 531. Principles of Automatic Control.*** (3:3:0) Prerequisites: Math. 321; Mech. Eng. 412, 534.
Transfer functions applied to mechanical, hydraulic, pneumatic, and electrical components, and their combination. Block diagrams, Nyquist and Routh criteria, Bode's and root locus plots, integral and error rate compensation. Nonlinear systems.
- 533. Stress Analysis of Aerospace Structures.*** (3:3:0) Prerequisite: Civ. Eng. 303.
Particular emphasis is given to analysis of aircraft and missile-type structures; buckling of columns and compression panels; shear and tension field panels; curved beams and rings; and semimonocoque structures.
- 534. Dynamic System Analysis and Modeling.** (3½:3:2) Prerequisites: Math. 321; Civ. Eng. 304.
Lumped models of mechanical, fluid, electromechanical, and thermal systems. Graphic models, physical system response; analog and digital simulation.

* Electives offered upon approval of department chairman. Frequency based on demand.

- 535. Advanced Vibration Analysis.** (3:3:0) Prerequisites: Math. 321; Civ. Eng. 304.
Vibrations of systems with multiple degrees of freedom; vibrations of elastic bodies; random vibrations; simple nonlinear systems.
- 537. Advanced Kinematics.*** (3:3:0) Prerequisite: Mech. Eng. 431.
Geometry of constrained motion, with application to point paths; kinematic synthesis; and types of mechanisms.
- 540. Heat Transfer.** (3½:3:2) Prerequisites: Mech. Eng. 412, 321; Math. 321.
Fundamentals of heat transfer; basic laws, conduction; convection; change of phase; radiation.
- 541. Advanced Heat Transfer.** (3:3:0) Prerequisite: Mech. Eng. 540.
Heat transfer analysis by numerical and analog methods. Emphasis on radiation and conduction. Use of digital and analog computers, passive analogs.
- 552. Design and Materials Applications.** (3:3:0) Prerequisites: Mech. Eng. 351, 454.
Applied and residual stresses; material selection; static, impact, and fatigue strength; fatigue damage; surface treatments; elastic deflection and stability—all applied to mechanical design.
- 554. Advanced Manufacturing Processes.*** (3:3:0) Prerequisite: Mech. Eng. 351.
Basic analysis of forming, machining, welding, and casting processes with emphasis on microstructures. Selection of process parameters with consideration of economics and material properties.
- 572. Interdisciplinary Systems Design.** (3:1:6) Prerequisite: Mech. Eng. 471.
Design projects emphasizing group project attack on contemporary problems. Interdisciplinary faculty and student participants.
- 581. Internal Combustion Engines.** (3:2:3) Prerequisite: Mech. Eng. 322.
Basic principles of spark-ignition and compression-ignition engines, actual cycles, performance characteristics, carburetion and ignition principles, detonation and combustion. Laboratory work with three advanced engine testing cells.
- 583. Principles of Turbomachinery.** (3:3:0) Prerequisite: Mech. Eng. 412.
Dimensional analysis; stator and rotor energy and momentum transfer; radial and axial flow machines; system component matching; Reynolds number and Mach number effects; applications.
- 585. Jet Propulsion Power Plants.** (3:3:0) Prerequisite: Mech. Eng. 322.
Synthesis course in thermal propulsion systems. The rocket, ram jet, and turbojet are used as vehicles for teaching propulsion fundamentals and system interactions.
- 591R. Seminar.*** (½:1:0 ea.) Prerequisite: senior standing.
Student and faculty presentation of topics of special and current interest.
- 595R. Special Problems.*** (Arr. ea.) Prerequisite: consent of department chairman.
- 597R. Undergraduate Research.*** (Arr. ea.) Prerequisite: consent of department chairman.
- 611. Theories of Fluid Turbulence.*** (3:3:0) Prerequisite: Mech. Eng. 412 or consent of instructor.
- 612. Principles of Ideal-Fluid Dynamics.** (3:3:0) Prerequisites: Mech. Eng. 412; Math. 322, 323.
- 621, 622. Thermodynamics Theory I, II.** (3:Arr.:Arr. ea.) Prerequisite: Mech. Eng. 322.

* Electives offered upon approval of department chairman. Frequency based on demand.

631. **Mechanical Control Systems.** (3:3:0) Prerequisite: Mech. Eng. 531.
635. **Advanced Vibration Analysis II.** (3:Arr.:Arr.) Prerequisite: Mech. Eng. 535.
637. **Advanced Dynamics of Mechanical Elements.** (3:3:0) Prerequisites: Math. 322, 323; Mech. Eng. 534.
- 641, 642. **Heat Transfer Theory I, II.** (3:3:0 ea.) Prerequisite: Mech. Eng. 540.
- 661, 662. **Elasticity in Engineering.** (3:Arr.:Arr. ea.)
- 697R. **Research.**** (Arr. ea.)
698. **Project for Master of Engineering.** (3-5:0:Arr.) Prerequisite: fifth-year standing in the mechanical engineering program.
- 699R. **Thesis for Master's Degree.**** (6-9:Arr.:Arr. ea.)
- 791R. **Seminar for Doctoral Students.** (1:1:0 ea.)
795. **Selected Topics in Mechanical Engineering.** (1-3:Arr.:Arr.)
- 797R. **Research for Doctoral Students.** (Arr. ea.)
799. **Dissertation for Doctoral Students.** (Arr.)
- **Graduate courses offered on demand only.**

English

Professors: Cheney (emeritus), B. Clark, M. Clark, Craig, Ellsworth, Farnsworth (graduate coordinator, 242 JKBA), Gassman, Hart, Jacobs, King, Larson, R. Thomas, Thomson, West (chairman, 246 JKBA), Wood, Young (emeritus).

Associate Professors: Blanch, Brady, Cox, Evans, Grass, J. B. Harris, Lambert, Madsen, McKellar, McKendrick, Tate, J. Thomas, Waterstradt.

Assistant Professors: Arnold, B. Best, Cracroft, Esplin, Geary, Hunsaker, Luthy, Wight, Williams.

Programs: Master of Arts (M.A.), Doctor of Philosophy (Ph.D.), Graduate Certificate in Teaching English as a Second Language.

Entrance Examination Required: Graduate Record Examination (verbal and advanced) or the senior comprehensive written examination of this department.

Application Consideration Dates: Same as Graduate School deadlines.

Entry Times: Any regular registration.

Master of Arts

Prerequisites: Undergraduate major or its equivalent (including one course in literary criticism, one course in history of the language, and one course in modern grammar) and a reading knowledge of one foreign language, preferably French or German.

Fields: English literature, American literature, the English language.

Minors Permissible: Any of the three fields not selected for the major or a related area, such as modern languages, linguistics, psychology, or comparative literature.

Requirements: Minimum of 24 semester hours plus thesis (6-hr. min.—699).

Required Courses: English 615; and 529, 624, or 626.

Thesis: A student may select any one of the following four options:

1. A thesis on a topic demanding research, criticism, or both.
2. Three long papers written in three different areas of English or American language or literature and on topics demanding research, criticism, or both.
3. Two long papers written in two different areas of English or American language or literature and on topics demanding research, criticism, or both; and a substantial creative work.
4. An extended creative project as described below. A candidate who wants to apply for this option should inform the Graduate Committee of the English Department when he begins his work for the degree. He must comply with the regulations of the English Department and the Graduate School in the same way as other candidates.

To prepare for option 3 the candidate must complete two hours of the following courses: English 315, 316, 318, 319; or, if he is a transfer student, their equivalent. To prepare for option 4 the candidate must complete at least two hours either as a graduate or undergraduate student in the English 300 writing series and at least two hours in English 518R. His average grade for the required course or courses must be at least B. He must also submit samples of his current creative writing to the Writing Committee of the English Department, who, within a two-week period, will evaluate them and will recommend acceptance or rejection of the candidate's application. When the candidate for either option has been assigned an advisory committee, the committee will approve his creative project—which may consist of such forms as essays, a drama or dramas, librettos, short stories, a novella, a novel, or poetry—to satisfy the thesis requirement.

This program is designed to prepare students for Ph.D. work in English and teaching English on the junior college level.

Doctor of Philosophy

Prerequisites: A master's degree in English from an accredited graduate school. If the earlier degrees have not included formal course work in the following areas, these courses must be completed in addition to the other Ph.D. requirements: (1) "History of the English Language" (English 421); (2) one of the following language courses: "Old English" (English 624), "Middle English" (English 626), or the "Structure of Modern English" (English 529); (3) "Bibliography and Methods of Research" (English 615); (4) "Literary Criticism" (English 351 or English 650). A reading knowledge of French and German (other languages may be substituted only with the written permission of the Graduate Committee of the English Department upon recommendation of the student's faculty sponsor).

Fields: English literature, American literature.

Minors Permissible: The fields listed above not selected for the major, or a related area, such as comparative literature, history, language, linguistics, approved by the advisory committee.

Requirements: Minimum of 24 semester hours plus dissertation (18-hr. min.—799). (A special oral exploratory interview will be conducted during the first semester in residence.)

Required Courses: As arranged.

Graduate Certificate in Teaching English as a Second Language (TESL)

The TESL Graduate Certificate is designed to prepare teachers both for overseas and the U.S. programs. Instruction is more applied than theoretical. In lieu

of a thesis, a field study is required. Applicants must be admitted to the Graduate School.

The Type A Certificate requires secondary or elementary school teacher certification. The Type B Certificate, for those planning to teach overseas permanently or in a U.S. college or university, requires only Ed. 403 (or Ed. 402 and Psych. 321) and Ed. 301B (or 301A) in addition to the regular TESL courses.

Prerequisites: B.A. or B.S. degree and admission to Graduate School.

Application Consideration Dates: Same as Graduate School deadlines.

Entry Times: Any regular registration.

Requirements: Minimum of 28 semester hours plus a field study (2-hr. min.—696).

Required Courses:

1. Professional courses (10-14 hours): English 577, 578, and 579.
2. English language and linguistics (11 hours): English 321 or 325 or Ling. 325; English 527 or Ling. 525; English 528; and English 529 or Ling. 528.
3. Supporting courses (7 hours): English 251 or Comp. Lit. 310; English 696; and 2 hours of cultural background of target country (to be approved by the coordinator).

Courses

- 500R. Eminent American Writers.** (1-3:1-3:0 ea.)
Different writers are treated each semester in this series.
- 510R. Eminent American Writers.** (1-3:1-3:0 ea.)
Different writers are treated each semester in this series.
- 518R. Advanced Creative Writing.** (2:2:0 ea.) Prerequisite: English 318, 319, or consent of instructor. Larson
A seminar in the writing of fiction, poetry, drama, and the essay.
- 520R. Studies in Theme and Form.** (2-3:2-3:0 ea.)
An intensive study of limited literary topics (the theory of myth, Gothic fiction, utopian literature, etc.). Varies according to instructor.
- 527. Phonology of Modern English.** (3:3:3 for TESL only) Prerequisites: English 321, 325; Ling. 325 or equivalent. Luthy, Cox
Articulatory phonetics, intonation, and contrastive analysis of English sounds with those of other languages.
- 528. Phonology of Modern English—TESL Laboratory.** (2:0:3) Prerequisite: completion of or concurrent registration in English 527 or equivalent. Luthy, Cox
Practical experience in developing aural discrimination and accent correction skills. Extensive work with bilinguals.
- 529. Structure of Modern English.** (3:3:0) Prerequisites: English 321; Ling. 325; or consent of instructor. Luthy, Cox
Application of the methods of linguistic science to the description of the phonology, morphology, and syntax of modern English.
- 577. Procedures in Teaching English as a Second Language.** (3:3:3) Prerequisite: English 321, 529, or Ling. 423. King, Madsen
Designed to acquaint students with methods and materials used in teaching English as a second language. Students will observe, discuss methods, and do some teaching.
- 578. TESL Materials Selection and Development.** (3:3:0) Prerequisite: completion of or concurrent registration in English 577. King, Madsen
For teachers of English as a second language. Evaluation of texts and readers.

- 579. TESL Student Teaching.** (4-8:0:4-8) Prerequisite: English 577 and consent of instructor. Madsen, King
Teaching practice in an English-as-a-second-language setting.
- 582. Extended Readings in Shakespeare.** (3:3:0) Farnsworth, Hart, Young
Extensive study of the body of Shakespeare's works.
- 615. Bibliography and Methods of Research.** (2:2:0) Gassman, J. Thomas
The use of library resources as tools for literary study and an introduction to various areas in which literary research may be pursued. To be taken in the first regular semester of graduate study.
- 621. Problems in the English Language.** (3:3:0) Prerequisite: English 421.
Cox, McKendrick
The study of a particular period in the English language or a particular aspect of the language, such as the study of morphology or syntax.
- 624. Old English.** (3:3:0) McKendrick, Young
A study of Old English grammar and vocabulary in order to understand traditional syntactical patterns and to read various types of Old English prose and poetry.
- 625. Beowulf.** (2:2:0) Prerequisite: English 624. McKendrick, Young
A close reading of the poem in the original, with emphasis upon literary and cultural values.
- 626. Middle English.** (3:3:0) McKendrick
A detailed study of the principal Middle English dialects as illustrated in the literature of the period.
- 631. The English Novel.** (3:3:0) Prerequisites: English 332, 333, or consent of instructor. Brady, B. Clark, Gassman
An intensive analysis of literary values and techniques in selected novels. Not a survey course.
- 635. The American Novel.** (3:3:0) Blanch, M. Clark, Jacobs
Various approaches to the novel with emphasis on the formal. Focus may vary according to the instructor and the needs of students.
- 641. The English Drama.** (3:3:0) Craig
A short intensive survey of English drama from its beginning, followed by independent research.
- 650. Literary Criticism.** (3:3:0) Prerequisite: English 351 or equivalent.
M. Clark, Hart, Larson
An examination of modern critical theory and practice and application by students to specific literary works.
- 651R. Studies in Poetry.** (3:3:0) Hart, Larson
- 652R. Studies in Prose Nonfiction.** (3:3:0)
Farnsworth, Hart, J. Thomas, Thomson
- 661. Colonialism and Puritanism in American Literature.** (3:3:0) Prerequisite: English 361 or consent of instructor. Jacobs, Thomson, Williams
Intensive readings in major writers of the emerging American literary and cultural traditions before 1800.
- 662. Romanticism in American Literature.** (3:3:0) Prerequisite: English 361 or consent of instructor. Ellsworth, Jacobs, Thomson
The rise and fruition of the romantic movement in American literature from Freneau to Lowell.
- 663A,B,C,D,E. Studies in Regional American Literature.** (3:3:0) Prerequisite: a general background in American literature. Cracroft, Jacobs, Lambert, Thomson

664. **Realism and Naturalism in American Literature.** (3:3:0) Prerequisite: English 362 or consent of instructor. M. Clark, Jacobs, Lambert
Dominant cultural and aesthetic trends since the Civil War.
666. **American Literature, 1900-1950.** (3:3:0) Prerequisite: course in modern American literature. M. Clark, Evans, Larson
667. **Folklore.** (2:2:0) Prerequisite: English 391 or consent of instructor. Cheney
Directed study in folklore and folkways, with emphasis on the Mormon heritage and tradition. Collecting, analyzing, and editing.
669. **Teaching English in the Secondary Schools.** (2:2:0) Prerequisite: English 377 or consent of instructor. West
Intensive consideration of literature, writing, grammar, and reading materials appropriate to English courses, and the effective use of these materials.
671. **The Medieval Period in English Literature.** (2:2:0) McKendrick
A close reading in the original of a principal work, such as *Troilus and Criseyde*, *Piers Plowman*, or *Sir Gawain and the Green Knight*, with emphasis upon its relation to the other literature, the culture, and the history of the period.
672. **The Renaissance in English Literature.** (3:3:0) Prerequisite: English 372 or consent of instructor. Larson, J. Thomas, Wood, Young
Research in individual authors, styles, influences, and trends. Emphasis will vary according to instructor.
673. **Classicism in English Literature.** (3:3:0) Prerequisite: English 373 or consent of instructor. Gassman, Hart
A study in depth of selected writers from the period 1660-1780.
674. **Romanticism in English Literature.** (3:3:0) Prerequisite: English 374 or consent of instructor. Cheney, B. Clark, J. B. Harris
An intensive review of the major figures and trends in the romantic period (1780-1832), along with individual research.
675. **The Victorian Age in English Literature.** (3:3:0) Prerequisite: English 375 or consent of instructor. Brady, B. Clark, Farnsworth
A detailed analysis of literary genres, values, and techniques in representative works of the period. Not a survey course.
676. **British Literature, 1900-1950.** (3:3:0) Prerequisite: course in modern British literature. Hart, Larson
680. **Contemporary Literature.** (3:3:0) Prerequisite: at least one course in twentieth-century literature, or consent of instructor. M. Clark, Hart, Larson
Study of specific trends in literature and criticism; students may select areas of interest.
682. **Problems in Shakespearean Scholarship and Criticism.** (3:3:0) (Offered alternately with English 641, "The English Drama.") Prerequisite: English 382, 582, or consent of instructor. Farnsworth, Hart
695. **Individual Readings in English.** (1-2:Arr.:0)
Intended for investigation beyond course work offered, not for filling minimum required hours.
696. **TESL Field Study.** (1-2:1-2:0) Prerequisite: completion of or concurrent registration in English 577 and 578, or consent of instructor. Madsen, King
Individual research projects for TESL Graduate Certificate candidates, culminating in a practical paper.

699. **Thesis for Master's Degree.*** (6-9:Arr.:Arr.)
See options described with master's program in English above.
- 728R. **Studies in Rhetoric and Style.** (3:3:0 ea.)
729. **Advanced Study in English Grammars.** (3:3:0) Prerequisite: English 529.
Cox
- 755R. **Studies in the Tragic Mode.** (3:3:0 ea.)
Craig, Hart
- 756R. **Studies in the Comic Mode.** (3:3:0 ea.)
Evans, Farnsworth, Gassman, Thomson
777. **Problems in Teaching English as a Second Language.** (3:3:0) Madsen, King
799. **Dissertation for the Ph.D. Degree.** (Arr.) Prerequisite: approval of the candidate's chairman.
- *With reference to continuous registration for this course, see page 35 of this catalog.

Food Science and Nutrition

Professor: Bennion (graduate coordinator, 2218-E SFLC).

Assistant Professors: Hill, Johnson (chairman, 2218-B SFLC).

Program: Master of Science (M.S.).

Entrance Examinations Required: None.

Application Consideration Dates: April 1 and October 15.

Entry Times: Fall or Winter semesters.

Master of Science

Prerequisites: Undergraduate major in food science and nutrition or a closely related field, with basic courses in the physical and biological sciences.

Fields: Nutrition, food science, combination of food science and nutrition.

Minors Permissible: Biochemistry recommended; other minors available in consultation with major professor; Option II.

Requirements: Minimum of 24 semester hours plus thesis (6-hr. min.); a statistics course.

Required Courses:

Nutrition:	FSN 635, 636, 637, 691, 695, and 450 or equivalent; Chem. 581 and 584.
Food Science:	FSN 435 and 450 or equivalent; FSN 660, 662, 665, 690, and 695; Chem. 581 and 584.
Food Science and Nutrition:	FSN 435, 450, 662, 695, 690, and 691; FSN 635, 636, or 637; Chem. 581 and 584.

These programs are designed to prepare students for Ph.D. work in nutrition or food science, for college teaching, and/or for positions in industry.

Courses

635. **Protein and Amino Acid Nutrition.** (3:3:0) (Offered 1973 and alternate years) Prerequisite: FSN 435 or equivalent.

636. **Energy Balance and Vitamin Nutrition.** (3:3:0) (Offered 1972 and alternate years) Prerequisite: FSN 435 or equivalent.
637. **Mineral Nutrition.** (3:3:0) (Offered 1972 and alternate years) Prerequisite: FSN 435 or equivalent.
660. **New Food Product Development.** (4:2:6) (Offered 1973 and alternate years) Prerequisite: FSN 450, 461 or equivalent.
662. **Flavor and Sensory Analysis of Food.** (2:1:1) (Offered 1973 and alternate years) Prerequisite: FSN 450 or equivalent.
665. **Environmental Contaminants in Food.** (2:1:3) (Offered 1972 and alternate years) Prerequisite: Chem. 384.
690. **Seminar in Food Science.** (1-2:1-2:0)
691. **Seminar in Nutrition.** (1-2:1-2:0)
695. **Methods of Research in Food Science and Nutrition,** (3:0:9) (Offered 1973 and alternate years)
- 697R. **Research.** (1-3:Arr.:Arr. ea.)
699. **Thesis for Master's Degree.** (6-9:Arr.:Arr.)

Geography

Professor: Layton (chairman, 167-D HGB).

Associate Professors: Grey, Tuttle.

Assistant Professors: Hudman, Jackson, Stevens.

Program: Master of Science (M.S.).

Entrance Examination Required: Graduate Record Examination (general and advanced section on geography).

Application Consideration Dates: Same as Graduate School deadlines.

Entry Times: Any regular registration.

Master of Science

Prerequisites: Undergraduate minor in geography or its equivalent. Students going into area studies should have a strong language background. Those emphasizing planning, cartography, or geography in business or industry should have background in mathematics or statistics.

Fields: Geography in education, area studies, cartography, urban and regional planning, historical and cultural geography, resource evaluation, application of geography in business and industry.

Minors Permissible: Option I or Option II.

Requirements: Minimum of 24 semester hours plus thesis (6-hr. min.—699).

Required Courses: Geog. 601, 620, 630, 698, 699.

This program is designed to provide a general background at the graduate level for either a terminal degree or preparation for more advanced work, and to allow specialization according to the student's specific interest in a particular area within the discipline.

Courses

- 501. Geography for Teachers.** (3:3:0)
A systematic approach to the fundamentals of geography, emphasizing source materials, teaching methods, tools, and techniques.
- 502R. Seminar in Regional Geography.** (2:2:0 ea.) (G-SS)
- 504. Geographic Field Techniques.** (2:1:2)
For majors only.
- 512. Cartography.** (3:1:4) Prerequisite: Geog. 312.
- 520. Quantitative Methods in Geography.** (3:3:0) Prerequisite: Math. 105 or equivalent.
- 522. Urban Geography.** (3:3:0) (G-SS)
Distribution of urban areas, their development, internal land use patterns, and functions in the world's economy.
- 533. Industrial Geography.** (3:3:0) (G-SS) Prerequisite: Geog. 231.
A systematic analysis of major industries in the United States with emphasis on planning and industrial location theory.
- 580. Geography of Underdeveloped Areas.** (2:2:0) (G-SS) Prerequisite: consent of instructor.
Physical, economic, and human geography as it affects the world's underdeveloped areas, with emphasis on future development possibilities.
- 598. Seminar in Techniques of Research and Presentation.** (2:2:0)
- 601. Physical Geography.** (2:1:2)
- 620. Cultural Geography.** (2:1:2)
- 630. History and Philosophy of Geography.** (2:2:0)
- 690R. Readings.** (1:0:2 ea.)
- 695. Special Problems.** (1-2:1-2:0)
- 698R. Seminar in Systematic Geography.** (2:2:0 ea.)
- 699. Thesis for Master's Degree.** (6-9:Arr.:Arr.)

Geology

Professors: Bissell, Brimhall, Bullock, Bushman, Hamblin, Hansen, Hintze (graduate coordinator, 362 ESC), Phillips, Rigby (chairman, 274 ESC).

Associate Professors: Best, Miller, Petersen.

Assistant Professor: Baer.

Programs: Master of Science (M.S.), Master of Arts in earth sciences (M.A.), Doctor of Philosophy (Ph.D.).

Entrance Examination Required: Departmental exploratory examination given during first week of enrollment.

Application Consideration Dates: Same as Graduate School deadlines. Application for teaching assistantships and other financial aid for the following school year must be received by the Geology Department before March 1.

Entry Times: Fall or Winter semesters only.

Master of Science

Prerequisite: Undergraduate degree in physical or biological sciences. Arrangements to make up any undergraduate deficiencies will be made in consultation with the Geology Department graduate coordinator during the first registration of entering graduate students.

Fields: Economic geology; mineralogy, geochemistry, and petrology; paleontology; stratigraphy and sedimentation; structural and field geology.

Minors Permissible: Option I or Option II.

Requirements: Minimum of 24 semester hours plus a published thesis (6-hr. min.—699).

Required Course: Geol. 512, "Geology of North America."

Master of Arts

Prerequisite: Undergraduate degree in physical or biological sciences.

Fields: Earth science (for junior high and high school teachers of geology and earth science).

Minors Permissible: Any combination of physical or biological science courses listed below.

Requirements: (1) a minimum of 12 hours in geology and 12 hours from the associated fields of astronomy, botany, chemistry, geography, mathematics, physics, zoology; (2) a comprehensive written examination of graduate course work prior to the thesis defense; (3) a thesis representing research work in the field of earth science under faculty adviser's supervision for a total of 6 hours; (4) a final oral examination on the research thesis.

Required Courses: Selections are to be made from the following courses:

Geology	507, 510, 512, 540, 577, 682, plus upper-division courses not previously taken
Bio. Agr. Education	321, 325
Botany	321, 331, 440, 455, 460, 510, 525, 539, 550, 557, 620, 655
Chemistry	351, 352, 353, 514, 598
Geography	405, 601
Mathematics	300, 301, 302, 371, 501, 502, 629
Physics	300, 527, 528, 536, 537
Zoology	376, 378, 457, 543, 545, 546, 547, 591R, 601

Doctor of Philosophy

Prerequisites: Master's degree in geology or equivalent.

Fields: Economic geology; mineralogy, geochemistry, and petrology; paleontology; stratigraphy and sedimentation; structural and field geology.

Minors Permissible: Any approved minor.

Requirements: Minimum of 60 semester hours plus a published dissertation (18-hr. min.—799).

Required Course: Geol. 512, "Geology of North America."

Courses

411. **Geomorphology and Air Photo Interpretation.** (3:2:2) Prerequisite: Geol. 112.
 Landforms and their geologic and environmental significance. Recognition and interpretation of landforms from air photos.
 Hamblin

- 451. Optical Mineralogy.** (3:2:2) Prerequisite: Geol. 352. Phillips
Fundamentals of optical crystallography and mineral identification techniques using the petrographic microscope.
- 460. Principles of Economic Geology.** (3:2:2) Prerequisite: Geol. 352. Bullock
Principles, genesis, and localization of ore deposits, including laboratory study of ore minerals.
- 470. Stratigraphy and Sedimentation.** (3:2:2) Prerequisite: Geol. 352. Bushman
Sediments, sedimentary rocks, and principles of stratigraphy.
- 480. Introduction to Paleontology.** (3:2:2) Prerequisite: Geol. 112. Petersen
Distribution, morphology, paleoecology, evolution, and stratigraphic significance of organisms in the geologic record.
- 501. Rocks and Minerals.** (2:2:0) Bullock
Origin, classification, and identification of earth's common raw materials. For nonmajors.
- 502. Geology for Teachers.** (2:2:0) Prerequisites: Geol. 101 and 102, or 103, or 111. Bushman
Designed to aid junior and senior high school teachers of earth science. Materials and methods useful for the classroom.
- 507. History of Geology.** (2:2:0) (Offered 1972-73 and alternate years) Bushman
Historical development of concepts and philosophy distinctive to geology.
- 510. Conducted Field Trips.** (1-3:Arr.:Arr.) Prerequisite: Geol. 101, 103, or 111.
Visits to and explanations of a variety of geologic features spectacularly displayed in the Intermountain West. Credit varies with number and length of trips in which student participates, but in general 30 hours will be spent in the field for each credit hour. Maximum credit allowable is 3 hours.
- 512. Geology of North America.** (4:3:2) Rigby
A region-by-region study of the areal geology, physiography, and geologic development of Canada, United States, and Mexico.
- ☐ **Chemistry 514. Inorganic Chemistry.** (3:3:0)
- 515. Photogeology.** (3:1:4) Hintze
Techniques useful to practicing geologists; use of parallax bar and various instruments applicable to contact print photos.
- 520. Petroleum Geology.** (4:4:0) (Offered 1973-74 and alternate years) Hansen
- 535. Ground Water.** (4:4:0) (Offered 1972-73 and alternate years) Hansen
- ☐ **Botany 539. Paleobotany.** (3:2:3) Tidwell
- 540. Geophysics and Constitution of the Earth.** (2:2:0) (Offered 1973-74 and alternate years) Best
Survey of physics of earth's interior and its bearing on plate tectonics.
- 544. Geochemistry Laboratory.** (2:1:2) Prerequisite: consent of instructor. Brimhall
Use of spectroscopic instruments for acquisition of chemical and isotopic data on geological materials.
- 545. Geochemistry.** (3:3:0) (Offered 1972-73 and alternate years) Prerequisite: consent of instructor. Brimhall
Geological materials and processes from a chemical point of view.
- 551. Advanced Mineralogy.** (3:2:2) Prerequisites: Geol. 351; Physics 202 or 213. Phillips
Crystallography, structure, and crystal chemistry of major mineral groups studied by X-ray diffraction and other methods.

- 552. Igneous and Metamorphic Petrography.** (3:1:4) Prerequisites: Geol. 352 and 551. Best
Microstructures, textures, and mineral associations.
- 561. Ore Deposits.** (4:4:0) Prerequisite: Geol. 460. Bullock
Metallic ore deposits—their origin, classification, and distribution. Emphasis on major ore deposits of the United States.
- 562. Industrial Minerals and Rocks.** (3:3:0) (Offered 1972-73 and alternate years) Prerequisite: Geol. 460. Bullock
Occurrence, distribution, and use of nonmetallic earth materials.
- 563. Mining Geology.** (3:3:0) (Offered 1973-74 and alternate years) Prerequisite: Geol. 460. Bullock
Ore search and appraisal; assembling geological data; mining techniques; and ore treatment.
- 574. Principles of Stratigraphy.** (3:2:2) (Offered 1972-73 and alternate years) Prerequisite: Geol. 470. Bissell
- 575. Precambrian and Paleozoic Stratigraphy.** (3:3:0) (Offered 1972-73 and alternate years) Hintze
Synthesis of regional stratigraphic relations in North America.
- 576. Mesozoic and Cenozoic Stratigraphy.** (3:3:0) (Offered 1972-73 and alternate years) Hamblin
North America Mesozoic and Cenozoic rocks and key fossils.
- 577. Oceanography.** (3:3:0) (Offered on demand) Prerequisite: Geol. 470. Hamblin
Oceanic processes, shoreline topography, sedimentary patterns, and sea floor features.
- 580. Invertebrate Paleontology (Protozoans through Brachiopods).** (4:3:2) (Offered 1973-74 and alternate years) Rigby
Morphology, paleoecology, evolution, and stratigraphic significance of invertebrates.
- 581. Invertebrate Paleontology (Mollusks through Hemichordates).** (4:3:2) (Offered 1973-74 and alternate years) Petersen
Continuation of Geol. 580.
- ☐ **Physics 581. Introduction to X-Ray Diffraction Analysis.** (3:2:3)
- ☐ **Physics 582. X-Ray Crystallography.** (3:2:3)
- 582. Biostratigraphy.** (3:2:2) (Offered 1973-74 and alternate years) Prerequisite: Geol. 480 or 581. Braithwaite
Fossils in their stratigraphic setting and principles of paleontologic chronology.
- 583. Palynology.** (3:2:3) (Offered 1972-73 and alternate years) Prerequisites: Bot. 105; Geol. 480. Bushman
Modern and fossil palynomorphs—their preparation, identification, and application to stratigraphic and paleoecologic problems.
- 591R. Seminar.** (1:1:0 ea.)
- 610. Structural Geology.** (3:3:0) (Offered 1973-74 and alternate years) Baer
Earth structures and their origin, emphasizing sequence of tectonic events and their global significance.
- 655. Igneous Petrology.** (4:3:2) (Offered on demand) Prerequisite: Geol. 352 Best
Origin and crystallization behavior of magmas, with emphasis on crystal-liquid relations in simple experimental systems.

- 656. Metamorphic Petrology.** (3:2:3) (Offered on demand) Prerequisite: Geol. 655. Best
Subsolidus mineral equilibria; thermodynamic concepts; geologic variables in metamorphic systems; graphical analysis of mineral assemblages.
- 670. Sedimentation and Sedimentary Tectonics.** (3:2:2) (Offered 1972-73 and alternate years) Bissell
- 671. Sedimentary Petrology—Carbonate Rocks.** (3:3:2) (Offered 1973-74 and alternate years) Bissell
- 672. Sedimentary Petrology—Clastic Rocks.** (3:2:2) (Offered 1973-74 and alternate years) Prerequisite: Geol. 470. Hamblin
- Botany 678. Organic Evolution.** (3:3:0) Stutz
- 678. Subsurface Methods.** (3:2:2) (Offered on demand) Prerequisite: Geol. 551. Baer
Use of electric logs in subsurface mapping and evaluation.
- 680. Micropaleontology.** (3:2:2) (Offered 1972-73 and alternate years) Prerequisite: Geol. 480 or 581. Braithwaite
Geologically important microfossils, including conodonts, ostracodes, and foraminifera.
- 682. Vertebrate Paleontology.** (4:3:2) (Offered on demand) Prerequisite: Geol. 480 or 581, or consent of instructor. Morphology, ecology, phylogeny.
- 685. Paleocology.** (4:3:2) (Offered 1973-74 and alternate years) Prerequisite: Geol. 480 or 581. Rigby
Ancient environments and ecology of major taxonomic groups.
- 696. Reading and Conference in Geology.** (1-4:1-4:0)
- 697R. Directed Field Studies.** (1-6:Arr.:Arr. ea.)
- 698. Research.** (1-4:1-4:0)
- 699. Thesis for Master's Degree.** (6-9:Arr.:Arr.)
- 797R. Directed Field Studies.** (1-6:Arr.:Arr. ea.)
- 799. Dissertation for Doctor of Philosophy Degree.** (Arr.)

Health Sciences

Professors: Hartvigsen, Shaw (college coordinator, 221-F RB), Watters (chairman, 213 RB).

Associate Professors: Hafen, Heiner, Thygerson.

Assistant Professors: Hurley, Rhodes, Rollins.

Programs: Master of Science (M.S.), Master of Health Education (M.H.Ed.).

Entrance Examination Required: None.

Application Consideration Dates: Same as Graduate School deadlines.

Entry Times: Any regular registration.

Master of Science

Prerequisites: An undergraduate major or minor (minimum, 20 hours or equivalent) in health sciences.

Fields: Health education, community health, safety education.

Minors Permissible: Option I.

Requirements: Minimum of 24 semester hours plus thesis (6-hr. min.).

Required Courses: Health 671, 692, 694, and Stat. 552.

Master of Health Education

Prerequisites: An undergraduate major or minor (minimum, 20 hours or equivalent) in health sciences.

Fields: Health education, community health, safety education.

Minors Permissible: Option I.

Requirements: Minimum of 32 semester hours; a written comprehensive examination.

Required Courses: Health 551, 671, 692, 694, and Stat. 552.

Courses

- ☐ **Microbiology 311. Sanitation and Public Health.** (2:2:0)
- ☐ **Psychology 321. Psychology of Adolescence.** (3:3:0)
- ☐ **Microbiology 331. Microbiology.** (5:3:6)
- ☐ **Physical Education 344. Physiology of Activity.** (3:3:0)
- ☐ **Sociology 357. (Sociol.-Psych.) Group Relations and Leadership.** (3:3:0)
- ☐ **Sociology 360. Introduction to the Field of Social Work.** (3:3:0)
- ☐ **Botany 376. General Genetics.** (3:3:0) Prerequisites: introductory course in college biology and one-year course in college chemistry.
- ☐ **Zoology 376. General Genetics.** (3:3:0)
- ☐ **Sociology 389. Social Aspects of Mental Health.** (3:3:0)
- ☐ **Zoology 417. General Parasitology.** (4:3:3)
- ☐ **Zoology 535. Medical Entomology.** (2:1:2)
- ☐ **Psychology 440. Abnormal Psychology.** (3:3:2)
- ☐ **Zoology 465. Mammalian Physiology.** (4:3:3)
- 501R. Health Education Workshop.** (1-3:Arr.:Arr.) Watters
A presentation of selected health education problems, followed by discussions. Conducted on a workshop basis.
- ☐ **Microbiology 501. Pathogenic Microbiology.** (5:3:6) Prerequisite: Micro. 331 or consent of instructor.
- 502R. Driver and Safety Education Workshop.** (1-3:Arr.:Arr.) Prerequisite: certified driver education instructor or consent of department chairman.
Presentation of current safety education problems, research, and methods of instruction.
- 503R. Health Problems Workshop.** (1-3:Arr.:Arr.)
Current problems related to school and community health.
- 530. First-Aid Instructorship.** (2:2:1) Watters
Qualifies students to become instructors for standard and advanced Red Cross courses in first aid.

- **Microbiology 531. Virology.** (4:2:6) Prerequisite: Micro. 501 or 511.
- **Education 550. Introduction to Guidance Services.** (2:2:0)
- 551. Fieldwork in Community Health.** (2:Arr.:Arr.) Recommended: Health 451. Overstreet
Designed to broaden the understanding of community health agencies, their roles, programs, and relationships.
- **Statistics 552. Statistical Methods in Education I.** (3:3:0)
- 552. School Health, Organization, and Services.** (2:2:0) Shaw
Considers desirable school health services and functions and relationships to public education and education law. Coordinates school health services with community programs.
- 561. Health of the Body Systems.** (3:3:0)
- **Geography 580. Geography of Underdeveloped Areas.** (2:2:0)
- **Psychology 585. Advanced Physiological Psychology.** (3:3:0)
- 625. Problems and Research Review in Safety Education.** (2:2:0) Prerequisite: Health 325. Thygerson
Analysis of accident cause and prevention; problems of behavior in school, home, traffic, and public; examination of theories and statistics.
- **Physical Education 631. Problems in Athletic Conditioning.** (2:2:0)
- **Education 646. Counseling Theory and Practice.** (3:3:0)
- 650. Preservation of Human Health.** (3:3:0) Prerequisite: Health 451 or equivalent. Hafen
An epidemiological approach to the cause, nature, extent, and trends in the deterioration of human health.
- 651. Community Organization for Health.** (3:3:0)
Nature of voluntary health organizations, current research in community school organization, and relationship of school health programs to community.
- 660. Body Responses to Health and Disease.** (2:2:0) Prerequisite: Health 561 or equivalent. Rhodes
The physiology and biological chemistry of stimulants and depressants.
- **Physical Education 662. Administration and Public Relations.** (3:3:0)
- **Zoology 662. Advanced Physiology I.** (2:1:2)
- 670. Environmental Health.** (2:2:0) Burgener
Emphasis upon educational practices that relate to improving the environmental approach.
- 671. Graduate Practicum.** (1:1:0) Watters
Analysis of the role and functions of the college health teacher. Supervised experience in teaching and research.
- 672. Social Hygiene.** (2:2:0) Heiner
To prepare a prospective teacher to instruct in family life education as it relates to health. Emphasis on the area of sexual maturation, family health problems, parenthood, and other social hygiene factors.
- 692. Research Methods in Health Sciences.** (3:3:0) Shaw
- 694. Seminar in Readings.** (2:2:0) Watters
- 696R. Independent Studies.** (1-3:Arr.:Arr. ea.) Watters

698. Field Project. (1-4:Arr.:Arr.)

699. Thesis for Master's Degree. (6-9:Arr.:Arr.)

History

Professors: Addy, Allen, Hafen (emeritus), Hyer, Jensen (chairman, 250 MSRB), Swensen.

Associate Professors: Alexander, Cardon, Larson (emeritus), Marlow, Schmutz (graduate coordinator, 243 MSRB), Warner (assistant chairman, 210 MSRB).

Assistant Professors: Britsch, Hill, Tobler, Wood.

Programs: Master of Arts (M.A.), Doctor of Philosophy (Ph.D.).

Entrance Examination Required: Graduate Record Examination (aptitude and advanced history test).

Application Consideration Dates: Same as Graduate School deadlines.

Entry Times: Any regular registration.

Master of Arts

Prerequisites: An undergraduate degree in history or equivalent.

Fields: Asia, Europe, Latin America, United States.

Minors Permissible: Option I.

Requirements: Minimum of 24 semester hours plus thesis (6-hr. min.—699).

Required Course: One seminar in thesis field.

Doctor of Philosophy

Prerequisite: A master's degree in history or the equivalent.

Fields: Group I. General Fields

- A. American history
- B. Ancient history
- C. Medieval history
- D. Modern Europe
- E. History of Asia
- F. Latin American history

Group II. Areas of Specialization*

- A. American history
 - 1. Colonial history, to 1789
 - 2. U.S. national, 1783-1877
 - 3. U.S., 1877 to present
 - 4. The frontier and western America
 - 5. History of religion in America
- B. Ancient history
 - 1. Greek history
 - 2. Roman history
- C. Medieval history
 - 1. Early medieval history
 - 2. Later medieval history

D. Modern Europe

1. Renaissance and Reformation
2. Seventeenth and eighteenth centuries
3. Nineteenth and twentieth centuries

E. History of Asia

1. Ancient Asia
2. Modern Asia

F. Latin American history

1. Colonial period
2. National period

*Areas of specialization other than those listed may be established upon approval of the committee chairman and the department chairman.

Minors Permissible: Any approved minor.

Requirements: Minimum of 24 semester hours plus a dissertation (18-hr. min.—799). Competency in a general field referred to as the major field, selected from Group I, above, plus competency in an area of specialization within the major field (see Group II). In addition, a second general field (Group I) or a second area of specialization (Group II) selected from a general field other than the major field. This second field or area will be considered the minor field. These three fields—the major field, the area of specialization within the major field, and the minor field—constitute the history fields. In addition to these, the student will present an approved field outside history. The written comprehensive covers each of these fields. The oral comprehensive does not cover the field outside history.

Progress Review: Near the end of the first year of work in the Ph.D. program, the advisory committee and, normally, two additional faculty members designated by the committee chairman, will conduct a comprehensive review of the student's progress. The review committee will evaluate the student's performance and provide whatever recommendations for or against continuance that it may deem advisable.

To facilitate the task of appraisal, the candidate should inform each of his instructors of his status and ask them to administer a special Ph.D.-level essay or examination some time during the course or in conjunction with the course final. The results of such tests are to be made available for the progress review.

Required Courses: At least one doctoral seminar.

Courses

- 606. Greek Thought.** (2:2:0) (Offered 1973-74 and alternate years) Swensen
Study of Greek intellectual and philosophical thought, and its relationship to Greek institutions.
- 607. Greek and Roman Historians.** (2:2:0) (Offered 1973-74 and alternate years) Swensen
A critical study of ancient Greek and Roman historians.
- 608. Roman Thought.** (2:2:0) (Offered 1972-73 and alternate years) Swensen
A study of Roman intellectual, philosophical, and scientific achievements and their relation to Roman institutions.
- 610. Early Medieval Times.** (2:2:0) (Offered 1972-73 and alternate years) Schmutz
Study of problems and interpretations in the history of the early Middle Ages from the fall of Rome to the mideleventh century.
- 611. Later Medieval Times.** (2:2:0) (Offered 1972-73 and alternate years) Schmutz
Study of problems and interpretations in the history of the late Middle Ages from the mideleventh century to the Renaissance.

612. **Medieval Thought and Culture.** (3:3:0) (Offered 1972-73 and alternate years)
Swensen
Study of the basic medieval achievements in philosophy, science, theology, literature, and education.
618. **Problems in Early Modern Europe.** (3:3:0) (Offered 1972-73 and alternate years)
Jensen
Extensive reading, analysis, and interpretation of selected historical problems of the sixteenth, seventeenth, and eighteenth centuries.
621. **Problems in Modern Europe.** (3:3:0) (Offered 1972-73 and alternate years)
Cardon
Reading, analysis, and interpretation of selected historical problems of the nineteenth and twentieth centuries.
625. **European Diplomatic History since 1815.** (2:2:0)
Cardon
Relationship between European diplomatic history and the domestic history of the major world powers, including the United States and Russia.
628. **European Thought and Culture to 1800.** (3:3:0) (Offered 1973-74 and alternate years)
Jensen
Emphasis is on humanism, reformation ideologies, the rise of scientific thought, Rationalism, and the Enlightenment.
629. **European Thought and Culture since 1800.** (3:3:0) (Offered 1973-74 and alternate years)
Tobler
A study of the most influential intellectual ideas of the nineteenth and twentieth centuries, their forms of expression, and their impact on the contemporary world.
633. **Intellectual History of Germany.** (2:2:0) (Offered 1972-73 and alternate years)
Tobler
Prerequisite: reading knowledge of German.
An analysis of the ideas which had the most powerful influence upon the historical development of Germany since the Reformation.
635. **Problems in Tudor and Stuart History.** (3:3:0)
Thorp
Examination of major sources and historical problems of sixteenth- and seventeenth-century England.
640. **The Far East.** (2:2:0)
Hyer
Extensive reading, analysis, and interpretation of selected problems of Asian development with emphasis on China, Japan, and India.
648. **Culture of Asia.** (2:2:0)
Hyer
Reading in depth and discussion of problems in Asian culture.
650. **Latin America.** (2:2:0) (Offered 1972-73 and alternate years)
Addy
An advanced study of the generalized historical development of Latin America—colonial and national periods considered.
660. **Problems in Western History.** (3:3:0) (Offered 1972-73 and alternate years)
Alexander, Allen, Warner
An analysis of the major interpretations and themes in the history of the American West.
666. **Problems in Utah History.** (2:2:0)
Campbell, Wood
Reading in depth in the documents and discussion of interpretations of important events in Utah history.
667. **Northwestern United States.** (2:2:0) (Offered 1972-73 and alternate years)
Allen, Hafen
670. **Problems in Colonial America.** (3:3:0) (Offered 1972-73 and alternate years)
Backman
672. **Problems in the Founding of the American Republic.** (3:3:0) (Offered 1973-74 and alternate years)
675. **Problems in the Early American Republic (1800-1848).** (3:3:0)
Hill

- 677. Problems in the Civil War and Reconstruction.** (3:3:0) (Offered 1973-74 and alternate years) C. R. Jensen
- 678. Problems in the Emergence of Modern America (1800-1920).** (3:3:0) (Offered 1973-74 and alternate years) Alexander
- 679. Problems in Contemporary American History.** (3:3:0) Marlow
- 681. Sources and Problems in American Intellectual History.** (3:3:0) Prerequisite: Hist. 381, 382. Hill, Marlow
Intensive reading of source materials in intellectual and social history.
- 686. Seminar in Ancient History.** (3:3:0) (Offered 1973-74 and alternate years) Swensen
- 687. Seminar in Medieval History.** (3:3:0) (Offered 1973-74 and alternate years) Schmutz
- 688. Seminar in United States History to 1865.** (3:3:0)
- 689. Seminar in United States History since 1865.** (3:3:0)
- 690. Special Studies in History.** (2:2:0) Prerequisite: consent of instructor.
Advanced research and analysis of important historical problems and movements.
- ☐ **Economics 691. Seminar in Economic History.** (2:2:0)
- 691. Seminar in Latin American History.** (3:3:0) (Offered 1972-73 and alternate years) Addy
- 692. Seminar in Asian History.** (3:3:0) (Offered 1972-73 and alternate years) Hyer
- 693. Seminar in European History (1500-1800).** (3:3:0) Jensen
- 694. Seminar in European History since 1800.** (3:3:0) Cardon, Tobler
- 695. Seminar in Western American History.** (3:3:0)
- 697R. Seminar in Utah History.** (3:3:0 ea)
- 698. Special Readings in History.** (1-2:0:Arr.)
- 699. Thesis for Master's Degree.** (6-9:Arr.:Arr.)
- 798. Special Readings in History.** (1-2:0:Arr.)
- 799. Dissertation for Doctor's Degree.** (Arr.)

Home Economics Education

Associate Professor: Brasher (chairman, 2234-B SFLC).

Assistant Professor: R. Young.

Program: Master of Science (M.S.).

Entrance Examination Required: Graduate Record Examination.

Application Consideration Dates: Same as Graduate School deadline.

Entry Times: Any regular registration.

Master of Science

Prerequisites: Undergraduate emphasis in home economics.

Fields: Home economics education.

Minors Permissible: Option I—any established minor in the College of Family Living, College of Education, or College of Social Sciences; Option II.

Requirements: Minimum of 24 semester hours plus thesis (6-hr. min.).

Required Courses: Home Ec. Ed. 530, 532, 630, 650, and 689; Ed. 660; and Stat. 552.

Courses

521R. Workshop in Home Economics Education. (2:Arr.:Arr. ea.) Prerequisite: consent of instructor.

Intensive study of application of principles and theory in home economics education.

530. Home Economics Education for Adults. (2:2:0) Prerequisites: Home Ec. Ed. 489; consent of instructor.

The principles, practices, programs, materials, and resources for teaching home economics education to adults.

532. Evaluation in the Teaching of Home Economics Education. (2:2:0) Prerequisite: Ed. 479 or consent of instructor.

Analysis of evaluation techniques and construction of evaluation devices unique to home economics.

630. Methods and Curriculum in Home Economics Education. (3:3:0)

Intensive study of methods of teaching and curriculum development for home economics education programs in the secondary schools.

650. Organization and Administration of Home Economics Education Programs. (3:3:Arr.)

689. Social Foundation of Home Economics Education. (3:3:Arr.)

Examination of social, economic, and educational forces which affect individuals and families.

693R. Independent Readings and Conference. (1-3:Arr.:Arr. ea.)

699. Thesis for Master's Degree. (6-9:Arr.:Arr.)

Humanities and Comparative Literature

Professors: R. Britsch (chairman, 113 JKBA), Spears.

Associate Professor: T. Britsch.

Program: Master of Arts (M.A.).

Entrance Examination Required: None.

Application Consideration Dates: Same as Graduate School deadlines.

Entry Times: Any regular registration.

Master of Arts

Prerequisites: Undergraduate major in comparative literature or English with strong background in a foreign language, or a foreign language with strong background in English.

Requirements: Minimum of 25 semester hours plus thesis (6-hr. min.—699). Language requirement: a reading knowledge of at least two foreign languages. It is recommended that one of the two be Greek or Latin.

Required Courses:

1. Comp. Lit. 610.

2. At least one course from the Comp. Lit. 471-475 series in addition to any taken on the undergraduate level.

3. From the courses in literature offered by the English and language departments: a major emphasis on one ancient or modern literature (for example, Latin or German or English) and minor emphasis on another. In the major area (9 hours or more), at least two of the courses must be on the graduate level. Work must be done in the original languages. Major emphasis should be placed on one era or period (for example, classicism or romanticism) and minor emphasis on another.
4. A bibliography and research course.
5. One graduate seminar in comparative literature.

Courses

- 471. Literature of the Middle Ages.** (3:3:0) W. 1974 McKendrick, Spears
A comparative study of English and continental European literature of the Middle Ages.
- 472. Literature of the Renaissance.** (3:3:0) W. 1973 Evans, Spears
A comparative study of English and continental European literature of the Renaissance.
- 473. Literature of the Enlightenment.** (3:3:0) W. 1974 Evans, Spears
A comparative study of English, American, and continental European literature of the Age of Enlightenment.
- 474. The Romantic Movement.** (3:3:0) F. 1972 Farnsworth, Spears
A comparative study of romanticism in the literature of England, America, and continental Europe.
- 475. Realism and the Modern Age.** (3:3:0) F. 1973 Evans, Spears
A comparative study of English, American, and continental European literature of the later nineteenth and twentieth centuries.
- 490R. Seminar in Comparative Literature.** (3:3:0 ea.) Prerequisite: Comp. Lit. 310.
Reading, analysis, and presentation of papers concerning selected topics in comparative literature. Basic topics vary from semester to semester.
- 495. Individual Readings in Comparative Literature.** (1-2:Arr.:0)
For comparative literature majors only, with permission of department chairman.
- 610. Methods of Study in Comparative Literature.** (3:3:0) Prerequisite: consent of instructor.
Approaches to the study of relationships among literatures and to analysis of types, genres, styles, etc.; definition of movements and periods.
- 690R. Seminar in Comparative Literature** (3:3:0 ea.) Prerequisite: Comp. Lit. 610 or consent of instructor.
Selected problems in comparative literature. Course content will vary from semester to semester.
- 695R. Individual Readings in Comparative Literature.** (1-2:Arr.:Arr. ea.)
For graduate majors in comparative literature only, with permission of department chairman.
- 699. Thesis for Master's Degree.** (6-9:Arr.:Arr.)

Industrial Education

Professors: Hinckley (on leave, '71-73), Jeppsen, McArthur.

Associate Professors: Grover, McKell (chairman, 250 SNLB), Mortensen, Nish.

Assistant Professor: Simmons.

Application Consideration Dates: March 15 and May 15 each year.

Entry Times: June 21, September 1, and January 1 each year.

Programs: Master of Science (M.S.), Master of Industrial Education (MIE).

Master of Science

Prerequisites: 30 semester hours in acceptable industrial and technical undergraduate courses; or a minimum of six years of bona fide trade experience.

Fields: Industrial arts education, technical education, technology.

Minors Permissible: (9-10 semester hours) Educational psychology, guidance and counseling, instructional media, special education, supervision and administration, community school, junior college curriculum, business management; Option II.

Requirements: Minimum of 27 semester hours plus thesis (6-hr. min.).

Required Courses: Ed. 660, Stat. 552 or 501, Ind. Ed. 699, and a minimum of 6 semester hours selected from graduate industrial and technical education courses.

Master of Industrial Education

Prerequisites: A valid industrial education teaching certificate and a minimum of one year's teaching experience in industrial education (teaching experience may be waived only by action of departmental graduate committee).

Fields: Industrial arts education, technical education.

Minors Permissible: (9-10 semester hours) Art, instructional media, educational psychology, special education, guidance and counseling, junior college curriculum, educational supervision and administration, community school; Option II.

Requirements: Minimum of 33 semester hours plus field project.

Required Courses: Ind. Ed. 610 or 615, 690, 694R (2-hr. min.), 645, 698; Ed. 560; and a minimum of 6 semester hours selected from graduate industrial and technical education courses.

Courses

505. Industrial Arts for Elementary Teachers. (2:2:0)

Nature and needs of teachers instructing industrial arts in the elementary schools with emphasis on content and procedures.

☐Technology 511. Computer-aided Drafting. (3:2:2)

☐Technology 530. Plant Layout and Materials Handling. (3:3:0)

☐Technology 531. Advanced Manufacturing Processes. (3:3:0)

535. Industrial Education Safety and Liability. (2:2:0)

Principles of accident causes and prevention in industrial education laboratories. Teacher and student responsibility regarding liability; present laws affecting school safety.

☐Technology 535. Advanced Physical Metallurgy. (3:3:0)

540. Industrial Occupational Information and Guidance. (2:2:0)

☐Statistics 552. Statistical Methods in Education I. (3:3:0)

☐Technology 555. Mechanical Forming Methods. (3:3:0)

☐Education 560. Educational Tests and Measurements. (3:3:0)

☐Technology 590R. Special Problems in Manufacturing. (1-3:Arr.:Arr. ea.)

593A,B,C. Workshop in Industrial Education. (1-3:Arr.:Arr. ea.)

Instruction in current industrial and technological advances related to industrial education.

- 610. History and Trends in Industrial and Technical Education.** (2:2:0)
Historical developments of industrial and technical education programs from their early beginnings to the present time.
- 615. Principles and Objectives of Industrial and Technical Education.** (2:2:0)
General philosophy, principles, and objectives of industrial arts, vocational education, and technical education programs.
- 620. Analysis in Industrial and Technical Education.** (2:2:0) Prerequisite: Ind. Ed. 615 or consent of instructor.
- 625. Course Construction in Industrial and Technical Education.** (2:2:0) Prerequisite: Ind. Ed. 620 or consent of instructor.
Preparation and use of a course of study in industrial and technical fields based upon an analysis of the occupation.
- 630. Problems of Adult Industrial Education.** (2:2:0)
Development of the adult industrial education movement and the problems relative to teaching adults, with emphasis on continuing education.
- 635. Planning and Equipping Industrial and Technical Programs.** (2:2:0) Prerequisite: Ind. Ed. 625.
A study of industrial and technical school laboratories designed to facilitate and supervise instruction in industrial arts, vocational education, and technical education.
- 640. Coordination and Supervision of Industrial and Technical Education.** (2:2:0) Prerequisite: Ind. Ed. 625.
Methods of supervision and coordination of industrial arts, vocational education, and technical education programs including laws, regulations, and policies affecting these programs.
- 645. Visual and Graphic Materials in Industrial Education.** (2:1:2)
Basis for the selection, development, and use of visual and graphic materials and their contribution to facilitating instruction in industrial and technical education.
- **Education 660. Research Design and Technical Writing in Education.** (3:3:0)
- 690, 691. Seminar.** (1:1:0 ea.)
Latest developments and research findings in the field of industrial and technical education are reviewed.
- 694R. Reading and Conference.** (1-3:1-3:0 ea.)
Limited to a maximum of 4 credit hours.
- 695R. Problems in Industrial and Technical Education.** (1-3:1-3:3-9 ea.)
Designed to strengthen the student in a given area of instruction provided in the industrial education program. Limited to a maximum of 6 credit hours.
- 698. Field Project.** (2-4:Arr.:Arr.)
- 699. Thesis for Master's Degree.** (6-9:Arr.:Arr.)

Institute of Government Service

Distinguished Professor: Grow.

Professors: Dyer, Knighton, Moffitt.

Associate Professors: Buckwalter, Harlow, Slover, Snow (director, CRWH), Stimpson.

Assistant Professors: Williams, Wright.

Program: Master of Public Administration (MPA).

Entrance Examination Required: Graduate Record Examination (general aptitude section).

Application Consideration Date: April 1.

Entry Time: Fall Semester only.

Master of Public Administration

Prerequisite: A bachelor's degree.

Fields: Government service.

Minor Permissible: Option II only.

Requirements: Minimum of 50 semester hours, including one area of specialization; written comprehensive examination.

Required Courses: Public Admin. 600, 601, 602, 603, 604, 605, 606, 607, 608, 610, 642R; Org. Behav. 610.

Areas of Specialization: State and local government administration, national government, urban and regional planning, international project administration, administrative research, administration of financial resources, administration of personnel resources, manpower planning and administration, organization development, law enforcement administration.

The basic mission of the Institute of Government Service is to prepare students for positions of leadership in the public service. The program is also designed to serve those who may seek positions with public and private governmental research organizations, as well as those who may find employment with a wide variety of semiprivate organizations whose purposes are public.

Courses

600. The Fundamentals of Public Administration. (3:3:0)

A survey of the study and practice of public administration in modern society.

601. Quantitative Analysis. (3:3:0)

Research methods in public administration; statistical analysis for decision making.

602. Organizational Analysis. (3:3:0)

Classical and contemporary theories, empirical research in large-scale organizations, and the impact of bureaucracy in modern society.

603. Public Personnel Administration. (3:3:0)

Processes and procedures, controls, and problems of public personnel administration.

604. Public Finance Administration. (3:3:0)

Organization for public finance administration, sources of public revenue, administrative aspects of budget preparation and control, intergovernmental relationships.

605. Management Information and Control Systems in Government. (3:3:0)

Basic concepts of financial information for planning and control decisions; designs of accounting systems and the use of financial reports.

606. Administrative Analysis. (3:3:0)

The practical application of research to administrative and community problems, emphasis on field experience, report writing.

607. Public Policy Development and Program Planning. (3:3:0)

Public policy development, decision making, and program planning.

608. Contemporary Issues and the Public Administrator. (3:3:0)

An examination of contemporary public issues and their impact upon the administration of public programs.

- 609. Practicum in Public Administration.** (1-3:0:0)
- 610. Project in Public Administration.** (3:3:0)
Required of all majors; to be taken during the third semester of enrollment.
- 620. Municipal Administration.** (3:3:0)
The functions and environment of the municipal administrator.
- 621. City Planning.** (3:3:0)
Basic problems and techniques in city planning.
- 622. State Government Administration.** (3:3:0)
Problems and issues, the changing role of state government, organizational and administrative innovations to meet new and changing demands.
- 630. International Project Administration.** (3:3:0)
The administration of technical assistance, with emphasis on the cultural restraints of programs transfer.
- 631. Comparative Public Administration.** (3:3:0)
Comparative analysis of administrative procedures and practices in developed and developing societies.
- 640R. Program Administration.** (3:3:0)
Basic factors underlying the effective administration of specific functional areas of public administration.
- 641R. Studies in Financial Management for Public Administrators.** (3:3:0)
Special studies in public finance administration.
- 642R. Colloquium.** ($\frac{1}{2}$:1:0)
Required of all majors each semester in residence.
- 643R. Directed Readings in Public Administration.** (1-3:1-3:0) Prerequisite: permission of sponsor and instructor.

Languages: Classical, Biblical, and Middle Eastern Languages

Professor: Clark (chairman, 329 MCKB).

Assistant Professor: Phillips.

LATIN

Program: Master of Arts (M.A.).

Entrance Examination Required: Graduate Record Examination (general aptitude).

Entry Times: Fall Semester recommended.

Master of Arts

Prerequisites: Undergraduate major in Latin or its equivalent and reading knowledge of Greek, French, or German.

Fields: Latin language, Latin literature, language teaching methodology.

Minors Permissible: Any established minor in the humanities or the sciences; Option II.

Requirements: Minimum of 24 semester hours plus thesis (6-hr. min.—699).

Required Courses: None.

Classical Languages

Courses

GREEK

611. **Readings in Greek: The Gospel and Acts.** (3:3:0) Prerequisite: one year of Greek or consent of instructor.
612. **Readings in Greek: Paul's Letters.** (3:3:0) Prerequisite: one year of Greek or consent of instructor.
613. **Readings in Greek: General Epistles and the Apocalypse.** (3:3:0) Prerequisite: one year of Greek or consent of instructor.

LATIN

520. **Advanced Composition and Grammar.** (2:2:0) Prerequisite: Latin 322 or equivalent. Clark
- 561, 562. **Elementary and Advanced Medieval Latin.** (2:2:0 ea.) Prerequisite: Latin 301 or 112 or equivalent. Clark, Phillips
621. **Romance Philology.** (3:3:0) Clark
661. **Cicero.** (3:3:0) Clark, Phillips
665. **The Latin Historians.** (2:2:0) Clark, Phillips
671. **Virgil.** (3:3:0) Clark, Phillips
675. **The Latin Poets.** (3:3:0) Clark, Phillips
Horace, Ovid, Lucretius, etc.
679. **The Latin Dramatists.** (3:3:0) Clark, Phillips
Plautus, Terence, etc.
- 681, 682. **The Latin Fathers.** (3:3:0 ea.) Prerequisite: consent of instructor. Phillips
- 690R. **Directed Readings.** (1-2:Arr.:0 ea.) Clark, Phillips
Individual study on a graduate level.
- 692R. **Seminar in Philology.** (2:2:0 ea.) Clark, Phillips
- 694R. **Seminar in Literature.** (2:2:0 ea.) Clark, Phillips
699. **Thesis for Master's Degree.** (6-9:Arr.:0) Clark, Phillips

Semitic Languages

AKKADIAN

- 781, 782. **Elementary Akkadian.** (3:3:0 ea.) Prerequisite: two years of biblical Hebrew.

ARAMAIC and TARGUMS

- 681, 682. **Biblical Aramaic and the Targums.** (2:2:0 ea.) Prerequisite: one year of biblical Hebrew.

COPTIC

- 641, 642. **Introduction to Coptic.** (3:3:0 ea.) Prerequisite: consent of instructor.

EGYPTIAN

641. **Elementary Egyptian.** (3:3:0) Prerequisite: consent of instructor.

642. **Elementary Egyptian.** (3:3:0) Prerequisite: Egyptian 641 or consent of instructor.

HEBREW

681. **Studies in the Hebrew Old Testament.** (3:3:0) Prerequisite: two years of Hebrew or consent of instructor.
682. **Studies in Hebrew.** (3:3:0) Prerequisite: Hebrew 681.

SYRIAC

781. **Elementary Syriac.** (5:5:0) Prerequisite: two years of biblical Hebrew or one year of Aramaic.
782. **Elementary Syriac.** (3:3:0) Prerequisite: Syriac 781.

UGARITIC

- 781, 782. **Elementary Ugaritic.** (3:3:0 ea.) Prerequisite: two years of biblical Hebrew.

Languages: French and Italian

Professors: Brown, Green, Lee (graduate coordinator, 366 MCKB).

Associate Professors: H. Clark, Turner (chairman, 357 MCKB).

Assistant Professors: Heudier, Kimball, Lambert.

Programs: Master of Arts (M.A.), Doctor of Philosophy (Ph.D.).

Entrance Examinations Required: None.

Application Consideration Dates: Same as Graduate School deadlines.

Entry Times: Any regular registration.

Master of Arts

Prerequisites: A bachelor's degree in French or equivalent, plus a reading knowledge of another foreign language.

Fields: Literature, language, foreign language teaching methodology.

Minors Permissible: Option I or Option II.

Requirements: Minimum of 28 semester hours plus thesis (6-hr. min.—699).

Required Courses: French 601, 677, and one course in each literary century.

Doctor of Philosophy

Prerequisites: A bachelor's degree or a master's degree in French.

Fields: French literature.

Minors Permissible: Any approved minor.

Requirements: A minimum of 62 semester hours plus a dissertation (18-hr. min.—799). Languages required: a reading knowledge of German, Latin, and one other Romance language.

Required Courses: French 601, 677.

Courses

511. **Advanced Conversation for Students of Institute.** (0:2:1)
520. **French Composition and Grammar.** (2:2:0)
601. **Bibliography and Research Techniques.** (1:1:0)
- **Latin 621. Romance Philology.** (3:3:0) R. Clark
622. **History of French Language.** (2:2:0) R. Clark
626. **French Phonology.** (2:2:2) Prerequisite: French 326 or consent of instructor.
Recommended for teachers.
629. **Stylistics.** (2:2:0)
Intensive linguistic and literary analysis of French, especially from modern writers: syntax, translation, advanced stylistic analysis, and advanced explication of texts.
- 645R. **Advanced Studies in French Civilization.** (2:2:0 ea.) Prerequisite: French 445 or consent of instructor. Lee
660. **Medieval French Literature.** (2:2:0) Heudier
665. **French Renaissance.** (2:2:0) Heudier
670. **French Classicism.** (2:2:0) Brown, Green
675. **The Enlightenment.** (2:2:0) Lambert
- 677R. **Principles of Foreign Language Learning and Teaching.** (2:2:0 ea.) Prerequisite: French 377 or consent of instructor.
682. **The French Romantic Movement.** (2:2:0) H. Clark, Green, Kimball
683. **Post-Romantic Nineteenth-Century Literary Movements.** (2:2:0)
H. Clark, Green, Kimball
- 687, 688. **Modern French Novel I, II.** (2:2:0 ea.) Lee, Turner
689. **Modern French Drama.** (2:2:0) Lee, Turner
- 690R. **Directed Readings.** (1-2:Arr.:0 ea.)
Individual study on a graduate level, to fit the needs of the graduate student. Not to be taken in lieu of classes.
- 692R. **Seminar in Philology.** (1-2:1-2:0 ea.) R. Clark
699. **Thesis for Master's Degree.** (6-9:Arr.:Arr.)
721. **Romance Dialects.** (3:3:0) R. Clark
723. **Old French Phonology and Morphology.** (2:2:0) R. Clark
- 740A,B,C,D. **Advanced Studies in French Literary Genres and Criticism.** (2:2:0 ea.)
- 760R. **Special Studies in Medieval French Literature.** (2:2:0 ea.) Heudier
- 765R. **Special Studies in French Literature of the Renaissance.** (2:2:0 ea.)
Heudier
- 770R. **Special Studies in French Literature of the Seventeenth Century.** (2:2:0 ea.)
Brown, Green
- 775R. **Special Studies in French Literature of the Eighteenth Century.** (2:2:0 ea.)
Lambert
- 780R. **Special Studies in French Literature of the Nineteenth Century.** (2:2:0 ea.)
H. Clark, Green, Kimball

- 785R. **Special Studies in French Literature of the Twentieth Century.** (2:2:0 ea.) Lee, Turner
- 792R. **Seminar in Philology.** (2:2:0 ea.) R. Clark
- 795R. **Seminar in French Literature.** (2:2:0 ea.)
799. **Dissertation for the Ph.D. Degree.** (1-6:Arr.:0)

Languages: Germanic Languages

Professors: Folsom, Rogers, Speidel, Watkins (chairman, 326 MCKB).
Associate Professors: Davis, Kelling, Smith (graduate coordinator, 321 MCKB).
Assistant Professors: Baker, Britsch, Roos.

Programs: Master of Arts (M.A.), Doctor of Philosophy (Ph.D.).
Entrance Examinations Required: None.
Application Consideration Dates: Same as Graduate School deadlines.
Entry Times: Fall Semester recommended.

Master of Arts

Prerequisites: Undergraduate major in German or its equivalent and knowledge of a second European language of 201 equivalent level.
Fields: Language, literature, or teaching emphasis.
Minors Permissible: Option I or Option II.
Requirements: Minimum of 24 semester hours plus thesis (6-hr. min.—699); written comprehensive examinations.
Required Courses: German 601, 620, 689; one seminar in specialty area.

Doctor of Philosophy

Prerequisites: Reading knowledge in two foreign languages (usually French, Russian, Latin).
Fields: Language, literature, or teaching emphasis.
Minors Permissible: Any approved minor.
Requirements: Minimum of 62 semester hours plus a dissertation (18-hr. min.—799).
Required Courses: German 601, 620, 689; two seminars in specialty area.

GERMAN

Courses

- | | |
|---|-----------------------|
| 601. Bibliography and Research Techniques. (1:1:0) | Davis, Kelling, Smith |
| 615. Teaching German Grammar. (2:2:0) Prerequisites: Ling. 325 and German 429, or consent of instructor. | Folsom, Watkins |
| An analysis and organization of German morphology and syntax for effective teaching of German grammar. | |
| 620. History of the German Language. (3:3:0) | Folsom, Watkins |
| 622. Gothic. (3:3:0) | Folsom, Watkins |
| 623. Old High German and Old Saxon. (3:3:0) | Folsom, Watkins |

626. **German Phonology.** (2:2:0) Prerequisite: German 326 or consent of instructor. Folsom
A study of the sounds of German and its stress, rhythm, and intonation patterns, contrasted and compared with those of English.
- 628, 629. **Middle High German I, II.** (3:3:0 ea.) Folsom, Roos, Watkins
650. **Literary Criticism.** (2:2:0) Baker, Kelling, Speidel
670. **German Baroque Literature.** (3:3:0) Roos
681. **German Romanticism.** (3:3:0) Baker, Speidel
683. **German Realism.** (3:3:0) Baker
689. **Contemporary German Literature.** (3:3:0) Prerequisite: consent of instructor. Kelling, Smith
- 690R. **Directed Readings.** (2:Arr.:0 ea.)
By special permission only.
- 692R. **Seminar in Philology.** (2:2:0 ea.)
Topics to be announced.
- 694R. **Seminar in Literature.** (2:2:0 ea.)
Topics to be announced.
- 697R. **Seminar in the Teaching of German.** (2:2:0 ea.) For experienced language teachers. Jarvis
Latest developments and research in various aspects of language teaching.
699. **Thesis for Master's Degree.** (6-9:Arr.:Arr.)
741. **German Lyric Poetry.** (2:2:0) Britsch, Kelling
742. **The German Drama to 1880.** (3:3:0) Rogers
743. **The German Drama from 1880 to Present.** (3:3:0) Britsch, Rogers
744. **The German Novel to 1880.** (3:3:0) Baker, Speidel
745. **The German Novel from 1880 to Present.** (2:2:0) Smith, Speidel
746. **The German Short Story.** (3:3:0) Davis, Roos, Smith
776. **Lessing.** (2:2:0) Davis, Rogers
777. **Schiller.** (2:2:0) Davis, Kelling, Smith
778. **Goethe.** (2:2:0) Kelling
- 792R. **Seminar in Philology.** (2:2:0 ea.)
- 794R. **Seminar in Literature.** (2:2:0 ea.)
799. **Dissertation for the Ph.D. Degree.** (Arr.)

Languages: Spanish and Portuguese

Professors: Compton, de Jong, Dowdle, Gibson (chairman, 303 MCKB), Hansen, Wilkins.

Associate Professors: Anderson, Moon, Rosen, Shreeve, Taylor.

Assistant Professors: Ashworth, Jackson, Quackenbush.

Programs:

Spanish: Master of Arts (M.A.), Doctor of Philosophy (Ph.D.).

Portuguese: Master of Arts (M.A.).

Entrance Examinations Required: None.

Application Consideration Dates: Same as Graduate School deadlines.

Entry Times: Any regular registration.

Master of Arts

Prerequisites: Undergraduate major in Spanish or Portuguese, or its equivalent.

Fields: Spanish: literary emphasis, language teaching emphasis, language (philology, applied linguistics) emphasis.

Portuguese: literary emphasis, language emphasis.

Minors Permissible: Option I or Option II.

Requirements: Minimum of 28 semester hours plus thesis (6-hr. min.—699). In the language teaching emphasis, 30 semester hours plus thesis, plus one year of teaching experience. The reading knowledge of a second foreign language is also required.

Required Courses: None.

Doctor of Philosophy

Prerequisites: Undergraduate major in Spanish or Portuguese, or its equivalent.

Fields: Spanish language, Spanish literature, language teaching.

Minors Permissible: Any approved minor.

Requirements: A minimum of 62 semester hours plus dissertation (18-hr. min.—799). A reading knowledge of German, Latin, and one other Romance language.

Required Courses: As determined in consultation with the graduate advisory committee.

PORTUGUESE

Courses

- | | |
|---|-------------------------|
| 522. History of the Portuguese Language. (2:2:0) | Gibson, Jensen |
| 552. Machado de Assis. (2:2:0) Prerequisites: Portuguese 441, 451, or equivalent. | de Jong, Dennis |
| 553. O Modernismo. (2:2:0) Prerequisites: Portuguese 441, 451, or equivalent. | de Jong, Dennis, Jensen |
| The modern movement in Brazilian literature (1920-1945). | |
| 620, 621. Portuguese Composition. (3:3:0 ea.) | de Jong |
| □ Latin 621. Romance Philology. (3:3:0) | Clark |
| 642. Contemporary Portuguese Literature. (3:3:0) | de Jong |
| 650. Brazilian Literature. (3:3:0) | de Jong |
| 651. Contemporary Brazilian Literature. (3:3:0) | de Jong |
| 690. Directed Readings. (1-2:0:Arr.) | |
| 692. Seminar in Philology. (2:2:0) | de Jong |
| 694R. Seminar in Literature. (2:2:0 ea.) | |
| 699. Thesis for Master's Degree. (6-9:Arr.:Arr.) | |

SPANISH**Courses**

520. **Advanced Spanish Composition and Grammar.** (2:2:0)
522. **History of the Spanish Language.** (2:2:0) Dowdle, Gibson
556. **Hispanic-American Poetry.** (3:3:0) Compton, Quackenbush
580. **Nineteenth-Century Spanish Drama and Poetry.** (3:3:0) Prerequisite: Spanish 441 or consent of instructor. Ashworth, Dowdle, Gibson
581. **The Nineteenth-Century Spanish Novel.** (3:3:0) Prerequisite: Spanish 441 or consent of instructor. Ashworth, Dowdle, Gibson
584. **Generation of '98.** (3:3:0) Anderson, Moon
601. **Bibliography and Research Techniques.** (2:2:0) Rosen, Taylor
615. **Teaching Spanish Grammar.** (2:2:0) Prerequisites: Ling. 325 and Spanish 326 or consent of instructor. Anderson
- **Latin 621. Romance Philology.** (3:3:0) Clark
626. **Spanish Phonology.** (2:2:0) Prerequisite: Spanish 326 or consent of instructor. Anderson
645. **Advanced Studies in Hispanic Culture.** (2:2:0)
653. **Latin American Drama.** (2:2:0) Quackenbush
654. **The Spanish-American Novel: Beginnings.** (2:2:0) Compton, Hansen, Quackenbush
655. **The Spanish-American Novel: Contemporary.** (2:2:0) Compton, Hansen, Quackenbush
656. **The Modernista Movement.** (2:2:0) Compton, Quackenbush
658. **Hispanic-American Short Story.** (2:2:0) Compton, Quackenbush
660. **Spanish Medieval Literature.** (2:2:0) Dowdle, Gibson
670. **Golden-Age Drama.** (3:3:0) Dowdle, Rosen
671. **Golden-Age Prose.** (2:2:0) Dowdle, Rosen
672. **Golden-Age Poetry.** (2:2:0) Dowdle, Rosen
Nondramatic.
677. **Principles of Foreign Language Learning and Teaching.** (2:2:0) Jackson, Taylor
For experienced language teachers.
- 685, 686. **Twentieth-Century Literature.** (2:2:0 ea.) Ashworth, Moon
- 690R. **Directed Readings.** (1-2:Arr.:Arr. ea.) Prerequisite: consent of instructor.
Individual study on a graduate level to fit the needs of the graduate student.
692. **Seminar in Philology.** (2:2:0) Anderson, Clark, Gibson
- 694R. **Seminar in Spanish Literature.** (2:2:0 ea.)
- 697R. **Seminar in Spanish Teaching.** (2:2:0 ea.) Anderson, Jackson, Rosen, Taylor
For experienced language teachers.
699. **Thesis for Master's Degree.** (6:Arr.:Arr.)
721. **Romance Dialects.** (3:3:0) Clark

741. **The Spanish Poetic Tradition.** (2:2:0)
742. **The Development of Spanish Drama.** (2:2:0) Rosen
744. **Spanish Novelistic Prose.** (2:2:0) Moon
773. **Cervantes.** (2:2:0) Rosen
774. **Lope de Vega.** (2:2:0) Gibson, Rosen
- 792R. **Seminar in Philology.** (2:2:0 ea.) Anderson, Gibson
- 794R. **Seminar in Literature.** (2:2:0 ea.)
799. **Dissertation for the Ph.D. Degree.** (Arr.)

Latin American Studies

Associate Professor: L. Sid Shreeve (coordinator, 165 FOB).

Program: Master of Arts (M.A.).

Entrance Examination Required: None.

Application Consideration Dates: Same as Graduate School deadlines.

Entry Times: Any regular registration.

Master of Arts

Prerequisites: Undergraduate preparation in the areas of Latin American studies. Proficiency in the Spanish or Portuguese language,* to be determined by examination or successful completion of Spanish or Portuguese 321.

Fields: Latin American studies. Concurrent majors in related areas.

Minors Permissible: None.

Requirements: At least 15 hours in approved Latin American content courses; plus a regular departmental major (no courses taken to fill the Latin American studies major may be counted toward the departmental major); a thesis on a Latin American subject acceptable to both majors (the same thesis will fill the requirements for both majors).

Required Courses: Latin American Studies 690R and Spanish 645.

Graduate Minor

Prerequisites: None.

Fields: Latin American studies.

Requirements: Proficiency in Spanish or Portuguese; 9 hours in graduate-level courses in Latin American related subjects.

Required Courses: Latin American Studies 690R and Spanish 645.

***Language Option:** When a student already has fluency in one of the required languages, he is encouraged to seek proficiency in the other or in a native language (Cakchiquel, Quechua, Guarani, etc.) of Latin America.

Study Abroad: Opportunities for overseas studies in Spanish and various other areas of study are offered by the University. At the present time a semester of study in Madrid and a summer residence study in Mexico are offered. The courses offered in these programs may be used to fill the re-

quirements for the majors and minors offered. (See respective departmental offerings for additional course details.)

Courses

Archaeology

631. Introduction to Mesoamerican Hieroglyphics and Iconography. (2)
651R. Advanced Field Methods of Archaeology (Mexico or Central America). (5 ea.)
695R. Library Research. (2 ea.)

Business Management

430. Introduction to International Business (Latin American emphasis). (3)
431. International Marketing (Latin American emphasis). (3)
432. International Corporate Finance (Latin American emphasis). (3)

Communications

580. Comparative World Communication Systems (Latin America). (2)

Geography

- 502R. Seminar in Regional Geography (semesters with Latin American content). (2)
580. Geography of Underdeveloped Areas. (2)

History

459. Inter-American Relations. (3)
650. Latin America. (2)
691. Seminar in Latin American History. (3)

Languages

(Portuguese)

552. Machado de Assis. (2)
553. O Modernismo. (2)
620. Portuguese Composition. (3)
621. Portuguese Composition. (3)
650. Brazilian Literature. (3)
651. Contemporary Brazilian Literature. (3)

(Spanish)

520. Advanced Spanish Composition and Grammar. (2)
556. Hispanic-American Poetry. (3)
645. Advanced Studies in Hispanic Culture. (2)
654. Spanish-American Novel: Beginnings. (2)
655. Spanish-American Novel: Contemporary. (2)
656. The Modernista Movement. (2)
658. Hispanic-American Short Story. (2)

Latin American Studies

- 690R. Interdisciplinary Seminar on Contemporary Latin American Problems. (3)
Prerequisite: consent of instructor.

Political Science

556. Modernization and Political Change in South America. (3)
557. Modernization and Political Change in Mexico and the Caribbean. (3)

Sociology

535. Social Change and Modernization in Latin America. (2)
537. Rural Social Development in Latin America. (2)
635. Problems in Latin American Social Development. (2)

Library and Information Sciences

Associate Professors: H. Thayne Johnson (director, 548 JRCL), Knight (assistant director, 548 JRCL), Marchant, Thorne, Wright.

Program: Master of Library Science (MLS).

Entrance Examination Required: Marginal applicants may be required to take the Graduate Record Examination.

Application Consideration Dates: Same as Graduate School deadlines.

Entry Times: Any regular registration.

Master of Library Science

Prerequisites: Reading knowledge of one foreign language or one of the following options:

Communications and Audiovisual. 11 to 12 hours of Comms. 201 or Sociol. 215; Comms. 535 or 610; Ed. 406, 506, 609, 610, 611; LIS 592.

Computer Science. Comput. Sci. 130, 231, 233, and LIS 654.

Statistics. 12 hours of statistics or Stat. 501 and 502.

The language requirement can be fulfilled in the following ways:

1. By completing 12 semester hours.
2. By completing German, French, or Spanish 201, or higher number.
3. By completing the 95-96 series in German, French, or Spanish.
4. By passing the Educational Testing Service examination.

Fields: Public library, academic library, school library, special library, genealogical research library, information sciences.

Minors Permissible: Option II only.

Requirements: 36 to 41 semester hours, a comprehensive research project, written and oral comprehensive examinations.

Required Courses: LIS 501 should be taken the first semester of graduate work. Specialization in one of the following fields is required:

The Public Library (36 hours). LIS 501; 513; 523; 527; 533; 539; two of 543, 545, and 547; 551; and 697R; electives from Ed. 340, 628; LIS 569, 662 or 579, 592, 628, 642 or 644; Comms. 335 or 610; Sp. and Dram. Arts 527; English 420—to total no less than 36 semester hours, all to be chosen in consultation with the student's adviser.

The Academic Library (38 hours). LIS 501; 513; 523; 527; 533; 539; two of 543, 545, and 547; 553 and 697R; electives from 579, 628, 642, 644, or others—to total no less than 38 semester hours, all to be chosen in consultation with the student's adviser.

The School Library (36 hours). LIS 501; 513; 523; 529; 533; 539; two of 543, 545, and 547; 557; Ed. 340 or LIS 569; Ed. 406 and LIS 697R; electives from LIS 592, 642, 662, or others—to total no less than 36 semester hours, all to be chosen in consultation with the student's adviser.

The Special Library (38 hours). LIS 501; 513; 523; 527; 533; 539; 547; 555; 624; 697R; electives from 644, Comput. Sci. 231 or 233 or others—to total no less than 38 semester hours, all to be chosen in consultation with the student's adviser.

The Genealogical Research Library (36 hours). Experience or course work to equal an undergraduate minor in genealogical research; LIS 501; 513; 523; 527; 533; 539; two of 543, 545, and 547; 559 and 697R; electives

from 579, 624, 628, 642, 644, or others—to total no less than 36 semester hours, all to be chosen in consultation with the student's adviser.

Information Sciences (41 hours). LIS 501; 513; 523; 527; 533; 539; 547; 551, 553, or 555; 579; 644; 654; 697R; and Comput. Sci. 233, 351, and 451.

In addition to course work, attendance at a number of informal lectures without credit is required of all students each semester. These colloquia are intended to broaden the student's outlook on librarianship and related fields through presentations by outstanding guest lecturers.

S. R. Shapiro, New York bookman, has established a gift of a \$100 U.S. Savings Bond to the outstanding graduate each year. This may be awarded as two \$50 bonds to two outstanding students.

Undergraduate students may register for LIS 513, 523, 527, 557, and 559. All other classes are restricted to LIS graduate majors and minors, with the following exception: computer science undergraduate and graduate majors, educational media graduate majors, and communications graduate majors may register for LIS 654. A practicum may be required with some types-of-library courses.

Courses

501. **Foundations of Library and Information Sciences.** (3:3:0)
Principles and concepts underlying library and information sciences. Types of libraries, objectives, general organization.
513. **Selection and Acquisition of Materials.** (3:3:0)
Principles, criteria, and practice in evaluation, selection, and acquisition of book and nonbook materials.
523. **Reference Theory and Service.** (3:3:0)
Intensive study of basic reference materials and services, including general bibliographic tools and form.
527. **Organization and Processing of Materials.** (3:3:0)
Theory and principle of the documentation of book and nonbook materials as expressed through classification and cataloging. Laboratory practice. Required. School library specialists should substitute LIS 529.
529. **Organizing Materials in the School Library—Media Center.** (3:3:0)
Classification and cataloging of materials in the instructional media center. Laboratory practice. Required for school library specialty.
533. **Library Organization and Administration.** (3:3:0) Prerequisite: LIS 501.
Organization and administration of libraries. Organizational and administrative theory discussed. Problems associated with personnel, authority, policy, planning, reports, standards, etc. Required.
539. **Practicum in Librarianship.** (1:1:0) Prerequisites: completion of or concurrent registration in LIS 501, 513, 523, and 527 or 529.
Thirty hours of practice work under the supervision of a professional librarian. Required.
543. **Literature of the Social Sciences.** (3:3:0)
Analysis of subject concerns, methodology, and unique information needs of the various social science fields. Examination of literature resources and problems of bibliographic control.
545. **Literature of the Humanities.** (3:3:0)
Analysis of subject concerns, methodology, and unique information needs of the various humanities fields. Examination of literature resources and problems of bibliographic control.
547. **Literature of the Sciences.** (3:3:0)
Analysis of subject concerns, methodology, and unique information needs of the various fields of science. Examination of literature resources and problems of bibliographic control.

- 551. The Public Library. (2:2:0) Prerequisite: LIS 533.**
Special problems in the public library. Strata of services, patterns of readers, special materials, organization, administration, standards, and public relations.
- 553. The Academic Library. (2:2:0) Prerequisite: LIS 533.**
Special problems in college, university, and associated research libraries. Collection, staffing, users, organization, administration, and public relations.
- 555. Special Libraries. (2:2:0) Prerequisite: LIS 533.**
Special materials and problems in the use and administration of special libraries. Staffing, users, organization, administration, public relations, and handling of nonbook materials.
- 557. The Instructional Media Center in the School. (2:2:0) Prerequisite: LIS 533.**
The place of the IMC in educational programs. Standards, management, equipment, budget, and services.
- 559. The Genealogical Research Library. (2:2:0) Prerequisite: LIS 533.**
Special materials and problems in the use and administration of genealogical research libraries.
- 569. Reading Guidance for Young People. (2:2:0)**
A critical study of the reading interests and needs of young people. Problems of the reluctant and the avid reader. Extensive examination, discussion, and reading of books.
- 579. Patterns and Problems of Adult Readers. (2:2:0)**
Reading interests and habits of adults, survey of studies, materials for various types of readers, reader guidance, reader's advisory service, role of the library in adult education.
- 580R. Workshop: Current and Special Problems. (1-2:1-2 weeks: 40-50 hrs. per week ea.)**
- 592. Organizing Nonprint Materials in the Library. (2:2:0) Prerequisite: LIS 529.**
The organization and utilization of such materials as pictures, maps, tapes, recordings, filmstrips, etc.
- 614. Literature of Mormonism. (2:2:0)**
An intensive survey of the literature of Mormonism with emphasis upon the selection, organization, and utilization of this literature in libraries.
- 624. Government Publications. (2:2:0)**
Intensive study of documents published by federal, state, and local governments, and the U.N., with attention to their selection, organization, and use in different types of libraries.
- 628. History and Theory of Written Communication. (3:3:0)**
Historical development of written communication and its interrelationships with the library in the context of the evolving social and cultural setting.
- 642. Seminar: Advanced Reference and Bibliography. (3:3:0)**
Types of bibliography, advanced bibliographic techniques, administering reference services, analysis of research problems. The librarian-user interface.
- 644. Seminar: Advanced Cataloging and Classification. (3:3:0)**
Examination of philosophical bases of classification and cataloging schemes. Extension of general descriptive cataloging, classification, and subject headings, and use of unabridged Dewey and L.C.
- 654. Seminar: Data Processing in Library and Information Sciences. (3:3:0)**
Survey of nonconventional and experimental methods and devices for cataloging, classifying, indexing, and retrieving; the use of data processing in all areas of librarianship.

662. **Trends in Library Services for Children.** (3:3:0) Prerequisite: Ed. 340. Historical development of children's libraries, materials, and services. Publishers, illustrators, and authors are considered. Relationship to sociological, educational, and philosophical forces of various periods discussed.
664. **Seminar: Philosophical Bases of Library and Information Sciences.** (2:2:0) The social, ethical, logical, and epistemological bases of library and information sciences.
- 694R. **Independent Research.** (1-2:Arr.:0 ea.)
- 697R. **Research in Library and Information Sciences.** (3:3:0 ea.) The bases, methods, and techniques of research. Experience in manipulating data. Statistical computer programs will be used and a research project completed under individual advisement. Required.

The following courses may be used as electives; some may be required to complete areas of specialization.

- ☐ **Communications 535. Public Relations.** (3:3:0)
- ☐ **Computer Science 351. Information Structure.** (3:3:1)
- ☐ **Computer Science 451. Information Systems Analysis.** (3:3:2)
- ☐ **Education 340. Children's Literature.** (2:2:0)
- ☐ **Education 406. Introduction to Production and Utilization of Instructional Media.** (2:1:3)
- ☐ **Education 609. Selection and Utilization of Audiovisual Materials.** (2:2:0)
- ☐ **Education 610. Designing and Producing Instructional Materials.** (2:2:1)
- ☐ **Education 611. Administering Instructional Media.** (2:2:0)
- ☐ **Education 628. Children's Literature.** (2:2:0)
- ☐ **English 420. Literature for Adolescents.** (2:2:0)
- ☐ **Humanities 201. The Arts in Western Culture: Age of Greece to Early Renaissance.** (3:3:0)
- ☐ **Humanities 202. The Arts in Western Culture: Late Renaissance to the Modern Age.** (3:3:0)
- ☐ **Psychology 570. Computer Use in Behavioral Sciences.** (3:3:6)
- ☐ **Sp. and Dram. Arts 527. Storytelling.** (2:2:0)
- ☐ **Statistics 501. Statistics for Research Workers I.** (5:4:3)
- ☐ **Statistics 502. Statistics for Research Workers II.** (5:4:3)

Linguistics

Associate Professor: Blair (chairman, 239 MCKB).

Assistant Professor: Lytle.

Degree Programs: Master of Arts (M.A.).

Entrance Examination Required: Graduate Record Examination.

Entry Times: Fall Semester only.

Master of Arts

Prerequisites: (1) 5 credits in upper-division linguistics; (2) intermediate-level competence in two foreign languages (201 or equivalent) or high-level competence in one foreign language (321 or equivalent).

Fields: Theoretical linguistics, applied linguistics.

Minors Permissible: Any established minor in the humanities or the sciences; Option II.

Requirements: Minimum of 25 semester hours plus thesis (6-hr. min.—699).

Required Courses: Ling. 528, 693.

Courses

525. Descriptive Phonology. (3:3:0)	Lytle
527. Descriptive Morphology. (3:3:0)	Blair
528. Syntax. (3:3:0) Prerequisite: Ling. 527.	Lytle
529R. Linguistic Structures. (3:3:1 ea.)	Lytle
623. Problems in Contrastive Linguistics. (3:3:0)	Blair
626. Problems in Historical Linguistics. (3:3:0)	
693. Seminar in Linguistics. (2:2:0)	Blair
699. Thesis for Master's Degree. (1-6:Arr.:0)	

Mathematics

Professors: Burton, Fearnley, Fletcher, Hillam (chairman, 292 MSCB), Moore, Robinson, Yearout.

Associate Professors: Gee, Gill, Hansen, Higgins, Jamison, Larsen, Peterson, Skarda, Snow, Wickes.

Assistant Professors: Armstrong, Campbell, Ferguson, Garner, Lamoreaux, Walker, Wight, Wynn.

Programs: Master of Science (M.S.), Master of Arts (M.A.).

Entrance Examinations Required: For the M.S. program, the Abstract Algebra, Linear Algebra, Real Analysis I, and Real Analysis II modular tests of the Educational Testing Service. These examinations should be taken early enough to permit the results to be available to the Department of Mathematics prior to the applicant's registration for his first semester as a graduate student. For foreign applicants, the Graduate Record Examination.

Application Consideration Dates: Same as Graduate School deadlines.

Entry Times: Any regular registration.

Master of Science

Prerequisites: Credit at least equivalent to the Brigham Young University requirements for a B.S. degree in mathematics. Also, a year's sequence in abstract algebra and one in advanced calculus.

OPTION I

Minors Permissible: Any approved minor.

Requirements: Minimum of 18 semester hours of graduate mathematics, a minor (9 hrs.), plus thesis (6-hr. min.).

Required Courses: None.

Special Examinations. Two of four one-hour written examinations in the general areas of algebra, analysis, applied analysis, or topology. A third one-hour written examination (content determined by the student's program or one of the two remaining general examinations).

OPTION II

Requirements: Minimum of 24 semester hours of graduate mathematics courses plus thesis (6-hr. min.); a written comprehensive examination.

Required Courses: Three of the four sets: Math. 551, 552; Math. 631, 641; Math. 634, 647; or Math. 671, 672.

Special Examinations: Three of four one-hour written examinations in the general areas of algebra, analysis, applied analysis, or topology.

This program is designed to prepare students for (1) additional study and research in mathematics at the Ph.D. level, (2) employment in industry or government.

Master of Arts

Prerequisites: Credit at least equivalent to the current Brigham Young University requirements for a B.A. degree in education with a teaching major in mathematics, a B.A. degree in mathematics, or a B.S. degree in mathematics.

Minors Permissible: Option I.

Requirements: Minimum of 24 semester hours plus thesis (6-hr. min.—699); a written comprehensive examination; also state teacher certification. (Required certification courses may not be part of the graduate program.)

Required Courses: Math. 541, 542, 629. Any two-semester 600 sequence or Math. 551, 552.

This program is designed to prepare students for teaching mathematics in junior colleges or secondary schools.

Courses

- 300. History of Mathematics.** (3:3:0) Prerequisite: Math. 112 or 301.
The development of mathematics, with emphasis on the underlying principles and motivations.
- 332. Introduction to Complex Analysis.** (3:3:0) Prerequisite: Math. 214 or 244.
Complex algebra, analytic functions, integration in the complex plane, infinite series, theory of residues, conformal mapping.
- 371, 372. Abstract Algebra.** (3:3:0 ea.) Prerequisites: Math. 142, 214, or 111 and 301.
Preliminary examination of algebraic systems: groups, rings, fields, vector spaces, linear transformations, matrices, etc.
- 385. Linear Algebra.** (3:3:0) Prerequisite: Math. 111 or 301.
Vectors and matrices, linear equations, determinants, characteristic values, linear operators, quadratic forms, etc.
- 387. Theory of Numbers.** (3:3:0) Prerequisite: Math. 111 or 301.
Foundations of number theory, congruences, residues, reciprocity law, Diophantine equations.

411. **Numerical Methods.** (3:3:0) Prerequisites: Comput. Sci. 130 and Math. 214 or 244. Recommended: Math. 322 or 372 or 385.
Interpolation, approximation, differentiation, integration, ordinary differential equations, and systems of equations, linear and nonlinear.
434. **Introduction to Ordinary Differential Equations.** (3:3:0) Prerequisite: Math. 214 or 244.
Methods and theory of ordinary differential equations.
436. **Introduction to Partial Differential Equations.** (3:3:0) Prerequisite: Math. 321 or 434.
Methods for solving the wave, heat, and Laplace equations; eigenvalue problems and Fourier series.
451. **Modern Geometry I.** (3:3:0) Prerequisite: Math. 301 or 371.
Synthetic and analytic projective geometry, affine and Euclidean geometry. Geometry by invariants of groups of transformations.
452. **Modern Geometry II.** (3:3:0) Prerequisite: Math. 451.
Relationships of geometry to algebra, supplemental design, and combinatorial mathematics.
501. **Real Numbers.** (3:3:0) (Offered on demand) Prerequisite: Math. 371. Recommended: Math. 541.
Extensive examination of various axiomatic descriptions of the real numbers and the interrelationships among these descriptions.
502. **Set Theory.** (3:3:0) (Offered on demand) Prerequisite: Math. 371.
Zermelo-Fraenkel axioms for set theory, the axiom of choice, ordinal and cardinal numbers, algebra of sets.
508. **Mathematical Logic.** (3:3:0) Prerequisite: Math. 371 or 541.
Propositional and first-order predicate calculi, set theories, well-ordering, transfinite induction.
512. **Introduction to Numerical Analysis.** (3:3:0) Prerequisite: Math. 411.
Theory of constructive methods in mathematical analysis.
- 513R. **Advanced Topics in Applied Mathematics.** (3:3:0 ea.) (Offered on demand) Prerequisite: consent of instructor.
- 541, 542. **Introduction to Real Analysis.** (3:3:0 ea.) Prerequisite: Math. 244 or 315.
A rigorous treatment of continuity, differentiability, integration of functions of real variables, and infinite series.
- 551, 552. **Introduction to Topology.** (3:3:0 ea.) Prerequisite: credit or concurrent registration in Math. 541.
Axiomatic treatment of linearly ordered spaces, metric spaces, arcs and Jordan curves, types of connectedness.
585. **Matrix Analysis.** (3:3:0) (Offered on demand) Prerequisite: Math. 322, 372, or 385.
Characteristic values, canonical forms, and functions of matrices, with applications.
629. **Teaching Mathematics in Secondary Schools.** (3:3:0) (Offered on demand)
- 631, 632. **Complex Analysis.** (3:3:0 ea.) (Offered 1972-73 and alternate years) Prerequisites: Math. 332 and 542.
- 634, 635. **Theory of Ordinary Differential Equations.** (3:3:0 ea.) (Offered 1973-74 and alternate years) Prerequisites: Math. 434 and 542.
- 641, 642. **Functions of a Real Variable.** (3:3:0 ea.) (Offered 1973-74 and alternate years) Prerequisite: Math. 542.

- 643R. Special Topics in Analysis.** (3:3:0 ea.) Prerequisites: Math. 541, 542.
Topics selected from continued fractions, stochastic processes, generalized functions, etc.
- 645. Tensor Analysis.** (3:3:0) (Offered on demand) Prerequisite: Math. 244 or 542.
- 647, 648. Theory of Partial Differential Equations.** (3:3:0 ea.) (Offered 1972-73 and alternate years) Prerequisites: Math. 436 and 542.
- 651, 652. General Topology I, II.** (3:3:0 ea.) Prerequisite: consent of instructor.
- 653R. Special Topics in Geometry.** (3:3:0 ea.) Prerequisites: Math. 372 and 452.
Topics from n-dimensional projective and algebraic geometry, foundations, transformations, curves and surfaces, forms and sheaf theory.
- 655R. Advanced Special Topics in Topology.** (3:3:0 ea.) (Offered on demand) Prerequisite: consent of instructor.
- 661, 662. Functional Analysis.** (3:3:0 ea.) (Offered on demand) Prerequisite: Math. 632 or 642.
- 671, 672. Modern Algebra.** (3:3:0 ea.) Prerequisites: Math. 371 and 372.
- 675R. Special Topics in Algebra.** (3:3:0 ea.) Prerequisite: Math. 671.
Group theory, commutative algebra, homological algebra, ring theory, algebraic number theory.
- 681. Linear Algebra.** (3:3:0) (Offered on demand) Prerequisites: Math. 371, 372.
- 695. Readings in Mathematics.** (1-2:1-2:0) (Offered on demand)
- 699. Thesis for Master's Degree.** (6-9:Arr.:Arr.)

Microbiology

Professors: Beck, Donaldson, (chairman and graduate coordinator, 775 WIDB), Larsen, Sagers.

Associate Professors: Bradshaw, Burton, Hoskisson, Jensen, North, Wright.

Programs: Master of Science (M.S.), Doctor of Philosophy (Ph.D.).

Entrance Examinations Required: None.

Application Consideration Dates: Same as Graduate School deadlines.

Entry Times: Any regular registration.

Master of Science

Prerequisites: Adequate preparation for graduate work in the Department of Microbiology presupposes satisfactory training in the physical and biological sciences. If a student is deficient in foundation courses, opportunity will be given after entering Graduate School to correct these deficiencies; however, such a student will not be able to receive the advanced degrees in the minimum time required of more qualified candidates.

Fields: Immunology, industrial microbiology, marine microbiology, medical microbiology, medical technology, microbial ecology, microbial genetics, microbial physiology, metabolism and virology.

Minors Permissible: Any approved biological or physical science minor; Option II.

Requirements: Minimum of 24 semester hours plus thesis (6-hr. min.—699).

Required Courses: Micro. 331, 501, 531, 551, 581, 691R, 699; one year of inorganic college chemistry; one semester of quantitative analysis; Chem. 351, 352, 354, 581, 584; one year of college physics; and Math. 111. Many of these courses would normally be met during a student's undergraduate training.

Doctor of Philosophy

Prerequisites: Master's degree in a biological or physical science.

Fields: Immunology, industrial microbiology, marine microbiology, medical microbiology, microbial ecology, microbial genetics, microbial physiology, metabolism and virology.

Minors Permissible: Any approved minor in biological or physical science.

Requirements: Minimum of 24 semester hours plus dissertation (18-hr. min.—799). Prior to selection of a dissertation subject and assignment to a research adviser, the student must pass a written qualifying examination in the following areas: (1) general microbiology, (2) pathogenic microbiology, (3) immunology, (4) virology, (5) bacterial physiology, and (6) microbial genetics. This examination will normally be given after one year of graduate study. It may be waived if the student has received the master's degree in microbiology at Brigham Young University. The courses and number of credit hours required for the Ph.D. degree will be determined by the advisory committee based upon the level of previous academic preparation of the student and his specific interests.

A student must pass a comprehensive written and oral examination prior to admission to candidacy for the Ph.D. degree. This examination will be taken not earlier than two semesters after completion of the qualifying examination. Prior to taking the comprehensive examination the student must have satisfied the language requirements and completed courses in differential and integral calculus, physical chemistry, and Micro. 641 and 661.

Required Courses: All classes required for a master's degree in microbiology, as listed above, plus differential and integral calculus, physical chemistry, Micro. 641 and 651.

Courses

501. Pathogenic Microbiology. (5:3:6) Prerequisite: Micro. 331 or consent of instructor.

A study of the characteristics of pathogenic bacteria, viruses, rickettsia, yeasts, and molds.

511. Immunology. (4:2:6) Prerequisite: Micro. 501 or consent of instructor. Theories of immunity; training in serological methods.

521. *Industrial Microbiology. (2:2:0) Prerequisites: Micro. 331 and biochemistry.

The employment of microorganisms in industrial processes.

522. *Industrial Microbiology Laboratory. (1:0:3) Prerequisite: completion of or concurrent registration in Micro. 521.

531. Virology. (4:2:6) Prerequisite: Micro. 501 or 511. Characteristics of viruses and virus diseases.

551. Advanced Microbiology. (5:3:6) Prerequisites: Chem. 581, 584 or consent of instructor.

581. History of Microbiology. (1:1:0) Prerequisite: senior or graduate status.

*Offered alternate years only.

- 601. Pathogenesis of Infectious Disease.** (2:2:0) (Offered 1973 and alternate years) Prerequisites: Micro. 511 and consent of instructor.
- 611. *Advanced Immunology.** (2:2:0) Prerequisite: Micro. 511.
- 631. Advanced Virology.** (2:2:0) Prerequisites: Micro. 531; Chem. 581 or equivalent.
Replication and biophysical characteristics of cytotidal and oncogenic animal viruses, with emphasis on the molecular basis for the attendant changes in cell metabolism.
- 632. Cell and Tissue Culture Techniques.** (2:0:4) Prerequisites: Micro. 531; Chem. 581 or equivalent.
A laboratory course in advanced techniques utilized in cell and tissue culture procedures.
- 641. Radioactive Tracer Techniques in Biology.** (3:1:6) Prerequisites: Physics 202 and consent of instructor.
- 651. Special Topics in Microbiology.** (2:2:0) Prerequisite: Micro. 551.
- 661. *Microbial Genetics.** (4:2:6) Prerequisites: Micro. 331; a course in general genetics; Chem. 581 or equivalent.
A study of the molecular bases of genetics of bacteria and bacteriophages, including mechanisms of DNA transfer, uptake, recombination, replication, and mutation.
- 691R. Graduate Seminar.** (1:1:0 ea.)
- 695R. Research.** (1-5:Arr.:Arr. ea.)
Instruction and laboratory experimentation in specific microbial disciplines.
- 699. Thesis for Master's Degree.** (6-9:Arr.:Arr.)
- 799. Dissertation for the Ph.D. Degree.** (Arr.)
- *Offered alternate years only.

Music

Professors: Bradshaw (composer-in-residence), Davis, Earl (graduate coordinator, E-556 HFAC), Goodman (chairman, C-550-D HFAC), Halliday, H. Laycock, R. Laycock, Mason, Nibley, Nordgren, Sardoni, Woodward.

Associate Professors: Barnes, Keeler, Stubbs, Williams.

Assistant Professors: Belnap, Dalton, Foxley, Gibbons, Longhurst, Manookin, Randall.

Programs: Master of Music (M.M.), Master of Arts (M.A.), Doctor of Philosophy (Ph.D.).

Entrance Examinations Required:

1. Music Department Graduate Entrance Examination: presupposes the information and skills of two years of music theory and one year of music history. Given on the day preceding each registration (excluding Sunday).
2. Graduate Entrance Audition: for majors or minors in applied music.
3. Graduate Record Examination—Music Supplement: required of doctoral students only.

Application Consideration Dates: Same as Graduate School deadlines.

Entry Times: Fall Semester and Summer Term only.

Master of Music

Prerequisite: A bachelor's degree in music or the equivalent. Grade-point average for undergraduate music classes must be B (3.0) or better.

Fields: Voice, piano, organ, or an orchestral instrument.

Minors Permissible: Option II only.

Requirements: Minimum of 32 semester hours, a scholarly paper, and a recital.

Required Courses: Music 566A,B, 567A,B (4 hours beyond bachelor's degree program); 613, 635; 660R (each semester); 693, 697R; any two classes from 638, 639, or 640; and 3 to 7 hours of electives.

This degree program is for qualified students whose interests lie principally in performance.

Master of Arts

Prerequisite: A bachelor's degree in music or the equivalent. Grade-point average for undergraduate music classes must be B (3.0) or better.

Fields: Music education, musicology, music theory.*

Minors Permissible: Option I or Option II.

Requirements:

Option I: Minimum of 29 semester hours (including Music 635 and 693), plus thesis (6-hr. min.—699).

Option II: Minimum of 24 semester hours plus thesis (6-hr. min.—699).

Required Courses:

Music Education: Music 605, 610, 612, 613, 635, 693, 699.

Musicology: Music 613, 635, 693, 699, and any 12 (Option II) or 15 (Option I) hours from the following classes: 636, 637, 638, 639, 640, 675.

Music Theory: Music 613, 635, 686, 693, 698, or 699.

*A student majoring in music theory who has had substantial experience in composition may, with the permission of the Music Department graduate faculty, submit a major composition to fulfill the thesis requirement for the Master of Arts degree.

The Master of Arts degrees are in preparation for (1) further study and research at the doctoral level; (2) teaching and/or supervision at the elementary, secondary, and junior college levels, and in private studios; (3) performance and composition; (4) background in many related fields, such as community recreation, therapy, church music, merchandising, broadcasting, and music criticism.

Doctor of Philosophy

Prerequisite: A master's degree in music or the equivalent.

Fields: Music education, musicology, music theory.

Minors Permissible: Any approved minor.

Requirements: Minimum of 68 semester hours plus dissertation (18-hr. min.).

Required Courses: Music 605, 613, 635, 693, 699, 754, 785; 794A,B; 799; and any 15 hours from the following: 636, 637, 638, 639, 640, 675.

The Doctor of Philosophy degree is in preparation for administration; junior college, college, university, or conservatory teaching; research; or composition.

Courses

537. **Music for Elementary School Teachers.** (2:2:0) Prerequisites: Music 226, 337, or elementary teaching experience. Davis
Experience in teaching various music activities in the elementary school.
- 565R. **Pedagogy.** (2:2:0) Prerequisite: advanced standing in performance.
- 566A,B; 567A,B. **Applied Music Literature.** (2:2:0 ea.) Prerequisite: senior standing as an applied music major.
Intensive study of literature for the major instrument. Taken by senior and graduate students in applied music, with separate sections for voice, piano, organ, and orchestral instruments.
- 587, 588. **Composition.** (3:3:0 ea.) Prerequisite: Music 292. Bradshaw, Manookin
601. **Music in the Elementary School.** (2:2:0) Prerequisites: Music 337 and the equivalent of an elementary education teaching minor in music. Davis, Groesbeck
603. **Music in the Junior High School.** (2:2:0) Prerequisite: Music 601. Davis
605. **Influence of Music on Behavior.** (3:3:0) Prerequisite: general psychology, sociology, or equivalent. Goodman, Mason
610. **Supervision and Administration of Music in the Public Schools.** (2:2:0) Goodman, Mason
612. **Music Education in Society.** (3:3:0) Prerequisites: Music 484, 485, or equivalent. Davis, Goodman
613. **Basic Concepts in Music Education.** (2:2:0) Davis, Goodman
Required of all candidates for graduate music degrees.
615. **Vocal Methods, Materials, and Resources.** (2:2:0) Prerequisite: Music 479 or equivalent. Halliday, Woodward
616. **Instrumental Methods, Materials, and Resources.** (2:2:0) Prerequisite: Music 479 or equivalent. Goodman
620. **Advanced Instrumental Conducting.** (2:3:3) Prerequisites: Music 292, 374, 375, 485, or equivalent. R. Laycock, Sardoni
621. **Advanced Choral Conducting.** (2:3:3) Prerequisites: Music 166, 292, 364, 374, 375, 485, or equivalent. Halliday, Woodward
- 625R. **Summer Music Clinic.** (1-2:4:4 ea.) (Two weeks during clinic)
May be counted as either music education or applied music.
- 630A,B,C. **Special Lectures in Music Education.** (2:2:0 ea.)
635. **Musical Research Techniques.** (3:3:0) Prerequisite: graduate standing or consent of instructor. Barnes, Earl
Required of all candidates for graduate music degrees during or before the first Fall Semester of graduate work.
636. **Music in the Middle Ages.** (3:3:1) Prerequisites: Music 484, 485. Barnes
637. **Music in the Renaissance.** (3:3:0) Prerequisites: Music 484, 485, or equivalent. Barnes
638. **Music in the Baroque Era.** (3:3:0) Prerequisites: Music 484, 485, or equivalent. Barnes
639. **Music in the Classic Period.** (3:3:0) Prerequisites: Music 484, 485, or equivalent. Barnes
640. **Music in the Romantic Period.** (3:3:1) Prerequisites: Music 484, 485. Barnes

- 641. Special Lectures in Musicology.** (2:2:0) Prerequisites: Music 484, 485, or equivalent.
- 648R. Collegium Musicum.** (1:0:3 ea.) Prerequisite: consent of director.
Practical experience in designing programs, outlining music, and preparing notes of music from medieval to modern times.
- 652. History of Notation and Paleography.** (3:3:0) Prerequisites: Music 484, 485, 637, or equivalent. Barnes
- 656. Hymnology.** (2:2:0) Prerequisites: Music 484, 485, or equivalent. Barnes, Earl
- 660Rp. Graduate Applied Instruction.** (2:1:0 ea.) Prerequisites: completion of undergraduate applied proficiency requirements and audition.
Fifteen 45-minute lessons per semester. Two to three hours' practice required per day.
- 663. Solo Recital.** (2:1:0) Prerequisite: permission of graduate applied faculty. Williams
Required of all graduate students minoring in applied music. Special fee.
- 673. Advanced Problems in Musical Structure.** (3:3:0) Prerequisites: Music 472, 491. Bradshaw, Manookin
- 675. Music of the Contemporary Period.** (3:3:0) Prerequisites: Music 484, 485. Bradshaw, Manookin
- 686. Pedagogy of the Music Theory.** (3:3:0) Prerequisite: Music 292. Nordgren
- 687, 688. Composition.** (3:3:0 ea.) Prerequisite: Music 588 or equivalent. Bradshaw, Manookin
- 693. Proseminar in Music.** (2:2:0) Prerequisites: Music 484, 485, and 635, or equivalent, and approval of advisory committee. Barnes, Davis, Earl, H. Laycock, Mason
Required of all candidates for graduate music degrees.
- 694A,B. Independent Readings.** (2:0:6 ea.) Prerequisite: Music 693 or equivalent.
- 697R. Recital for Master of Music Degree.** (4:Arr.:Arr. ea.) Prerequisite: approval of advisory committee and graduate music faculty.
Required of all candidates for the Master of Music degree. As part of the course requirement the candidate is expected to present to a committee of the graduate faculty a scholarly paper related to the recital literature. Special fee.
- 698. Composition for Master's Degree.** (2-6:Arr.:Arr.) Prerequisite: approval of the Music Department graduate faculty based upon evidence of ability in composition as manifested in a preliminary work. Bradshaw
- 699. Thesis for Master's Degree.** (6-9:Arr.:Arr.) Prerequisite: approval of Music Department graduate faculty.
- 753. Advanced Problems in Notation.** (3:3:0) (Offered 1973-74 and alternate years) Prerequisite: Music 652. Barnes
- 754. History of Musical Instruments.** (3:3:0) (Offered 1972-73 and alternate years) Prerequisites: Music 484, 485, or equivalent. Williams
- 785. Historical Aspects of Music Theory.** (3:3:0) (Offered 1973-74 and alternate years) Prerequisite: Music 292. Nordgren
- 794A,B,C,D. Seminar in Music.** (3:3:0 ea.) Prerequisites: Music 635, 693, or equivalent, and approval of graduate advisory committee. Barnes, Davis, Earl, H. Laycock
- 799. Dissertation for the Ph.D. Degree.** (Arr.) Prerequisite: approval of the Music Department graduate faculty.

Organizational Behavior

Professors: Dyer (chairman, 265 JKBA), Daniels (Psychology), Moffitt (Psychology).

Associate Professors: S. Covey, Stimpson (Psychology), Snow (Political Science).

Assistant Professors: J. Covey, Wright (Political Science).

Program: Master of Arts (M.A.).

Entrance Examination Required: An oral screening examination by members of the faculty and a team of current graduate students. If a candidate lives a considerable distance from Provo, he may make special arrangements with the chairman for a different screening program.

Application Consideration Dates: May 15.

Entry Times: Fall Semester. (Winter Semester by special permission.)

Master of Arts

Prerequisites: Training in research methods, statistics, psychology, sociology, business management, political science, or related fields. Previous work and business experience are also desired.

Fields: Organizational behavior.

Minors Permissible: Option I or Option II.

Requirements: Minimum of 45 semester hours, an internship, plus a research report. Program requires two academic years.

Required Courses: Org. Behav. 640, 655, 679, 689.

The Department of Organizational Behavior has as a major objective the development of persons who will be working in organizations as professionals in the areas of organization research and development, management training and development, personnel management, or industrial relations, or who will seek careers in teaching or research in the fields in organizational behavior.

Courses

522. Management Development II: Case Histories and Practicum in Interpersonal Relations. (3:3:0) Prerequisite: Org. Behav. 321. J. Covey, S. Covey
Skill application of problem diagnosis, empathy, and communications in two-person settings—cases, individual student commitment, and involvement.

523. Leadership in Organizations: Case Histories and Practicum. (3:3:0) Prerequisite: Org. Behav. 321. J. Covey, S. Covey
Solution of "live" leadership problems from students' experiences with use of skills, leadership theory, and disciplines.

606. Organizational Behavior and Administration. (3:3:0)
S. Covey, Snow, Wright
Current theories of organization and how administrators and managers can develop and improve organizational functioning.

610. Management Development: Philosophy and Personal Style. (3:2:2)
Daniels, Stimpson
A laboratory experience to help potential managers develop a philosophy of management and improve their own personal management style.

640. Behavioral Approaches to Organizational Processes and Structures. (3:3:0)
Prerequisites: Org. Behav. 321 or equivalent, or consent of instructor.
Dyer, Moffitt
Review of concepts and research findings from psychology, social psy-

chology, sociology, cultural anthropology in understanding behavior and implications in organizations.

- 650. Research Methods in Organizational Diagnosis and Evaluation.** (3:3:0) Prerequisites: two courses in statistics and/or research methods; or consent of instructor.

Adaptation of behavioral science research methods to problems of organizational development as applied to evaluation and action research strategies.

- 655. Organization Behavior Research Report.** (3:2:2) Prerequisite: consent of instructor.

Special research projects in organizations on group structure, functions, leadership, and the control to increase group effectiveness.

- 660. Advanced Seminar in Organizational Behavior.** (2:2:0) Prerequisite: consent of instructor.

Focus on topics and problems varies each semester. Examples are conflict, resolution, power and influence, intergroup relations.

- 669. Readings in Organizational Behavior.** (1-3:0:0)

A reading and discussion course with direction from a faculty member in areas of the student's interest.

- 670. The Dynamics of Organization Change: Interventions and Strategies.** (3:3:0) Prerequisite: Org. Behav. 640 or equivalent. Dyer, Stimpson

Examination of forces operating to induce or resist change and the strategy and tactics of change.

- 672. The Consultative Process.** (3:3:0) Prerequisites: Org. Behav. 640, 670, or equivalent; or consent of instructor. Dyer, Moffitt

Concentration on third-party role in group development, educational processes, conflict resolution, and intervention strategies.

- 675. Theory and Method of Laboratory Training.** (3:2:2) Prerequisites: Sociol.-Psych. 357; Org. Behav. 640, 670, or equivalent; or consent of instructor. Daniels, Dyer, Moffitt

Study of research findings from studies of behavior modification to the particular problems in training behavioral skills.

- 679. Practicum in Organizational Development.** (6-9:2:28) Prerequisite: consent of instructor and advisory committee.

One semester in an organization on a development project under supervision of faculty member and professional person in organization.

- 689. Continuous Professional Development Seminar.** (1-4:0:4) Prerequisite: consent of instructor and advisory committee.

While in residence, membership on learning team; integrating and synthesizing learning experience.

Philosophy

Professors: Madsen, Riddle, Yarn.

Associate Professor: Warner.

Assistant Professors: Rasmussen, Reynolds (chairman, 73 JSB).

Minor Only

Prerequisites: Lower-division courses prerequisite to those chosen for the minor.

Requirements: For master's level, 9 semester hours; for doctoral level, 15 semester hours.

Required Courses: Those specified by philosophy representative on the student's advisory committee.

Courses

- 311. Philosophy of Language.** (3:3:0)
Traditional and contemporary theories of meaning and truth and their bearing on philosophical issues.
- 312. Philosophy of Mind.** (3:3:0)
The concepts of mind and brain and their relationship; the self and self-knowledge; action and free agency.
- 316. Philosophy of Science.** (3:3:0) Prerequisite: Phil. 110. Recommended: Phil. 101.
- 318. Social and Political Philosophy.** (3:3:0)
Philosophical analysis of economic, legal, social, and political issues; for example, conditions of liberty, moral status of economic systems, models of individual and state.
- 321. History of Ancient and Medieval Philosophy.** (4:4:0) Prerequisite: Phil. 110.
- 322. History of Modern Philosophy.** (4:4:0) Prerequisite: Phil. 110.
- 323. Contemporary Anglo-American Philosophy.** (3:3:0) Prerequisite: Phil. 110.
Pragmatism, positivism, and various linguistic approaches to philosophical problems.
- 324. Contemporary Continental Philosophy.** (3:3:0) Prerequisite: Phil. 110.
Existentialism, phenomenology, and Marxism.
- 413R. Topics in Ethics and Value Theory.** (2-3:2-3:0 ea.)
- 421R. Topics in Ancient Philosophy.** (2-3:2-3:0 ea.) Recommended: Phil. 321.
- 422R. Topics in Medieval Philosophy.** (2-3:2-3:0 ea.) Recommended: Phil. 321.
- 423R. Topics in Modern Philosophy.** (2-3:2-3:0 ea.) Recommended: Phil. 322.
- 424R. Topics in Contemporary Philosophy.** (2-3:2-3:0 ea.)
- 448R. Readings in Philosophy.** (1-4:1-4:0 ea.)
- **Mathematics 508. Mathematical Logic.** (3:3:0)
- 515. Seminar in the Philosophy of Religion.** (2:2:0)
- 516. Seminar in the Philosophy of Science.** (2:2:0)
- 530. Seminar in Philosophical Analysis.** (2:2:0)
- 648R. Directed Readings in Philosophy.** (1-4:1-4:0 ea.)

Physical Education

Professors: Allsen, Bangerter, Hart, Hartvigsen, Holbrook, C. Jensen, Kimball, Roundy (chairman, 270 SFH), Shaw (graduate coordinator, 221-F RB).

Associate Professors: Call, Fisher, Jacobson, Jarman, Johnson, Watts.

Assistant Professors: Barker, Bestor, Francis, Jones.

Programs: Master of Arts (M.A.), Master of Science (M.S.), Doctor of Education (Ed.D.).

Entrance Examinations Required: For the doctoral program, the qualitative and quantitative sections of the Graduate Record Examination.

Application Consideration Dates: Same as Graduate School deadlines.

Entry Times: Any regular registration.

Master of Arts

Prerequisites: A bachelor's degree with a major in physical education involving knowledge and competencies equivalent to those required in the undergraduate major program at Brigham Young University.

Fields: Dance, sports teaching, administration, supervision and curriculum.

Minors Permissible: Option I.

Requirements:

1. With no project, 36 semester hours.
2. With a project, 24 semester hours plus project (6 semester hours).

Required Courses:

1. With no project, 12 hours as follows: P.E. 692; one of the following: P.E. 662, 661, or 640; three of the following: P.E. 547, 642, 645, 647, or 648; one of the following: P.E. 601, 610, or 670.
2. With a project, P.E. 692.

Master of Science

Prerequisites: A bachelor's degree with a major in physical education involving knowledge and competencies equivalent to those required in the undergraduate major program at Brigham Young University.

Fields: Exercise physiology, mechanical analysis, adaptive physical education and rehabilitation, measurement and statistics, learning and performance of motor skills.

Minors Permissible: Option I.

Requirements: Minimum of 24 semester hours plus thesis (6-hr. min.—699).

Required Courses: P.E. 635, 692.

Doctor of Education

Prerequisites: Two years of successful professional experience.

Fields: Curriculum, supervision and administration, physical education at the elementary level, exercise physiology, anatomy and mechanical analysis, adaptive physical education and rehabilitation, measurement and statistics, learning and performance of motor skills, history and philosophy of physical education.

Minors Permissible: Any approved minor.

Requirements: Minimum of 75 semester hours plus a dissertation (12-hr. min.—799).

Required Courses:

1. Graduate education area (15 semester hours).
2. Physical education core (25 semester hours): P.E. 547, 601, 610, 640, 642, 645, 647, 648, 662, 670, 692.
3. Minor area (10-14 semester hours).
4. Electives (20 or more hours in physical education or related areas).

Courses

547. Advanced Corrective Physical Education. (2:2:1) Prerequisite: P.E. 446. Call

570. Teaching Progression in Individual Sports. (2:4:0) Jones, Valentine

571. **Teaching Progression in Team Sports.** (2:2:2) Jones, Hirst
575. **Materials and Methods for Secondary Teachers.** (2:1:2) Hirst
587. **Modern Dance Composition—Advanced.** (1:0:TBA)
588. **Modern Dance Performing Techniques.** (2:0:TBA) Prerequisites: P.E. 382, 385.
- 589A,B,C. **Workshop in Modern Dance.** (1-2:Arr.:0 ea.)
601. **Problems in Physical Education.** (2:3:0) Bangerter
610. **Philosophy of Physical Education.** (2:2:0) Holbrook
Interpretations, beliefs, and concepts underlying the profession of physical education.
631. **Problems in Athletic Conditioning.** (2:2:0) Jensen
Application of scientific principles to problems in athletic conditioning.
633. **Physical Education for the Mentally Retarded.** (2:2:0) Prerequisite: bachelor's degree in physical education. Call
Theory, concepts, and programs in physical education for trainable and educable mentally retarded.
635. **Research Design in Physical Education.** (2:2:1) Prerequisites: P.E. 462 and 464, or equivalent.
640. **Curriculum Construction in Physical Education.** (2:2:0) Hart
Curriculum problems for elementary, secondary, and college physical education programs.
642. **Mechanical Analysis of Activities.** (2:2:0) Johnson
Analysis of the mechanics of movement in various activities to develop the highest degree of skill.
645. **Functional Anatomy and Kinesiology.** (2:2:0) Prerequisites: Zool. 105, 261, 262; P.E. 341, 344, 446, 449, or equivalent. Call
Functional applied anatomy and kinesiology for physical education students.
647. **Physiology of Strength and Endurance.** (2:2:0) Prerequisites: Zool. 105, 261, 262; P.E. 341, 344, 446, 449, or equivalent. Fisher
Physiology of strength of the musculoskeletal system and endurance of the cardiovascular system.
648. **Theory of Motor Learning.** (2:2:0)
661. **Supervision in Physical Education.** (2:2:0) Prerequisite: P.E. 413 or equivalent. Jarman
662. **Administration and Public Relations.** (3:3:0) Hartvigsen
Administrative and public relations problems at all school levels: local, state, and national.
663. **Planning Facilities.** (2:2:0) Kimball
Basic planning for facilities for school and community physical education and recreation programs.
670. **History of Physical Education.** (3:3:0) Holbrook
673. **Physical Education in the Elementary School.** (2-3:3:0) Holbrook
For teachers, administrators, and supervisors. Interrelationships with the curriculum, and content material in accomplishing educational results.
- 674A,B,C. **Workshop in Physical Education in the Elementary Schools.** (1:comb. of 40 hrs. ea.) (Offered on demand) Jacobson
Materials, methods, and teaching progression in physical education for the elementary school.

- 691. Doctoral Admission Seminar.** (1:2:0) Prerequisite: provisional acceptance in the Ed.D. program. Allsen, Roundy
- 692. Research Methods in Physical Education.** (3:3:0) Roundy
- 694. Individual Study.** (2:1:1) Kimball
Readings from recently published professional literature.
- 698. Field Project, Master's Degree.** (1-6:0:Arr.) Roundy
- 699. Thesis for Master's Degree.** (6-9:Arr.:Arr.) Roundy
- 780. Professional Preparation.** (2:2:0) Prerequisites: completion of graduate courses, and experience in college instruction and teacher education. Holbrook, Roundy
- 797R. Individual Research in Physical Education.** (2-6:Arr.:Arr. ea.) Prerequisites: undergraduate major in physical education; matriculation for graduate study in the department. Roundy
- 799. Dissertation for the Ed.D. Degree.** (12:Arr.:Arr.)

Physics and Astronomy

Professors: Ballif, Barnett, Decker, Dibble, Dixon, Dudley, Eastmond, Fletcher (emeritus), A. Gardner (graduate coordinator, 185 ESC), J. Gardner (chairman, 296 ESC), Hales (emeritus), Harrison, A. Hill, M. Hill, McNamara, Nelson, Vanfleet.

Associate Professors: Hansen, Jensen, Jones, Larson, Palmer, Rogers.

Assistant Professors: Christensen, Evenson, Hatch, Mason, Strong, Woodford.

Programs: Master of Arts (M.A.), Master of Science (M.S.), Doctor of Philosophy (Ph.D.).

Prerequisites: For the M.S. or Ph.D. degree, satisfactory completion of the following courses or their equivalents: Physics 121, 122, 221, 222, 316, 317, 318, 321, 322, 341, 342, 431, 471, 551, 552, and Math. 214, 434. For the M.A. degree, satisfactory completion of the following courses or their equivalents: Physics 121, 122, 221, 222, 300, 316, 317, 321, 322 (or 341 and 386), and Math. 214, 434. Any deficiencies in formal course work at the undergraduate level will be considered at registration time, and an appropriate program for removing these deficiencies will be developed by the student and his sponsor or adviser.

Special Examinations Required: Graduate Record Examination scores (both aptitude and advanced physics) are required of all foreign student applicants for admission. All other graduate students must submit satisfactory advanced physics GRE scores before their third semester of graduate registration.

Application Consideration Dates: Same as Graduate School deadlines. Applications should be submitted early if scholarships or teaching assistantships are being sought.

Entry Times: Any regular registration.

Master of Arts

Prerequisites: Math. 111, 112; general education requirements outside of the physical sciences and mathematics.

Fields: General preparation in physics, physics teacher education.

Minors Permissible: Mathematics, education, or Option II.

Requirements: Minimum of 24 semester hours plus thesis (6-hr. min.—699).

Required Courses: None.

M.A.-3 Program: One mode of completing this degree is an M.A.-3 program for secondary and junior college teachers. This three-year program begins in the junior year and leads to both B.A. and M.A. degrees in physics as well as teacher certification. A typical M.A. program follows:

First Year: Chem. 105; Ed. 301B; Math. 113, 214, 301, 302, 371, 434; Physics 211, 213, 214, 317.

Second Year: Ed. 310, 403, 415; Health 362; Physics 222, 300, 316, 318, 321, 511; Phys. Sci. 377, 479.

Third Year: Physics 341, 386, 551, 552, a two-semester physics series, 699.

Suggested Minors: Math. 387, 501, 502; Ed. 640, 642, 644.

Master of Science

Fields: Acoustics, astrophysics, atomic physics and spectroscopy, biophysics, nuclear physics, plasma physics, solid state physics, theoretical physics, planetary and space physics.

Minors Permissible: Recommended minor in mathematical physics, which may be satisfied with Physics 517, 518, and 621; also Option II.

Requirements: Minimum of 24 semester hours plus thesis (6-hr. min.—699).

Required Courses: None.

The Master of Science degree generally is sought by those who intend to continue on for the Ph.D. degree, but it also serves as a terminal degree for many who intend to go into industrial or governmental research or into teaching. Those intending to enter research would find the courses listed in item 1 under the Ph.D. ("Required Courses") to be profitable. However, one may find it is to his advantage to substitute some more specialized courses or some undergraduate courses where this can be done in conformity with the regulations of the Graduate School.

Doctor of Philosophy

Prerequisites: Courses to satisfy the language requirements. Physics students may fulfill the language requirement under option (III) as described under the general University requirements for the Ph.D. degree. If this option is selected the student must present A or B grades in Comput. Sci. 307 (digital computer techniques), and 6 hours selected from Physics 617, 618; Math. 371, 411, 412, 647, 648. (These courses must be in addition to courses used to fulfill course work requirements listed under "Required Courses.")

Fields: Acoustics, astrophysics, atomic physics and spectroscopy, biophysics, nuclear physics, plasma physics, solid state physics, theoretical physics, planetary and space physics.

Minors Permissible: See "Required Courses" below.

Requirements:

1. Minimum of 48 hours in approved formal course work, exclusive of graduate seminars, plus dissertation (18-hr. min.—799).
2. Successful completion of comprehensive written examinations covering the required courses listed below and an oral examination covering the two general fields selected under fields listed below (see under "Required Courses"). Normally these examinations will be taken toward the end of the second year.
3. Before admission to candidacy, tentative acceptance as a research student by a member of the faculty of the Department of Physics and Astronomy.

Required Courses: Physics 517, 518, 651, 652; 621, 641 or 527, 528. A graduate seminar each semester of residence. At least 12 credit

hours in that field listed below which is most closely related to the field of the student's research to constitute a major and 12 credit hours in a second field to constitute a minor. No duplication between these courses and those listed above is permitted.

1. Acoustics: Physics 561, 562, 565, 566, 623, 631, 681.
2. Astrophysics: Physics 527, 528, 611, 612, 627, 628, 671.
3. Atomic physics and spectroscopy: Physics 527, 528, 631, 632, 671, 672, 711R.
4. Nuclear physics: Physics 555, 631, 655, 656, 681, 751, 752, 711R.
5. Plasma physics: Physics 536, 537, 623, 631, 632, 645, 646.
6. Solid state physics: Physics 623, 631, 681, 682, 711R.
7. Theoretical physics: Physics 617, 618, 625, 626, 632, 751, 752.
8. Planetary and space physics: Physics 536, 537, 631, 645, 646, 671, 672, 711R.
9. Physics group for physics and astronomy degree only: Physics 536, 537, 625, 626, 645, 646, 655, 656 (6 hrs.); 631, 632, 641, 642 (6 hrs.); 711R.

The student whose research is in acoustics or biophysics may, with the approval of his committee, construct a 12-hour major or minor which includes courses outside the department.

Courses

- 300. Philosophical Foundations of Modern Physics.** (3:3:0) Prerequisite: college-level course in chemistry or physics, or consent of instructor. Nielsen
Selected topics of modern physics (e.g., relativity and quantum mechanics) will be briefly developed and examined for their philosophical implications. Some current challenging problems will be explored.

Successful completion of Math. 113 or Math. 243 and Physics 221 or their equivalents is prerequisite to all courses above 310.

- 316. Atomic and Nuclear Physics Laboratory.** (1:0:3) Prerequisite: completion of or concurrent registration in Physics 222.

- 317, 318. Elementary Methods in Theoretical Physics.** (3:3:0 ea.)

Formal procedures in theoretical physics; application of linear algebra, vector analysis, complex analysis, Fourier techniques, etc., to the classical equations of physics.

- 321, 322. Mechanics.** (4:4:0 ea.) Prerequisite: Physics 317.

Newton's laws applied to particles and systems of particles including rigid bodies. Conservation principles, Lagrange's equations, Hamilton's equations, and special relativity.

- 341, 342. Electricity and Magnetism.** (3:3:0 ea.) Prerequisite: Physics 317.

Classical theory of electricity and magnetism developed from its experimental foundations. Electrostatics, magnetostatics, currents and their associated fields, circuit theory, Maxwell's equations.

- 386. Advanced Experimental Techniques.** (2:1:5)

Basic techniques in electrical, optical, thermal, electronics, etc., measurements and instrumentation for contemporary experimental physics.

- 387. Advanced Physics Laboratory.** (2:1:3) Prerequisite: Physics 386 or equivalent.

Application of contemporary methods and instruments to the experimental observation and measurement of physical phenomena.

- 391, 392. Seminar in Current Physics.** (1:1:0 ea.) Prerequisite: consent of instructor.

- 431. Thermal Physics.** (3:3:0)

Principles of thermodynamics with introduction to the concepts of kinetic theory and statistical mechanics.

- 441. Electronics for Physicists.** (5:3:6)
Fundamental concepts of electronics and basic circuitry with emphasis on the tools needed for specialized research in a variety of fields of physics.
- 471. Optics and Electromagnetic Theory.** (3:3:0)
An intermediate treatment of physical and quantum electromagnetic wave phenomena with introduction to modern topics such as coherent interference, holography, lasers, radiation, etc.
- 497R. Introduction to Research.** (1-3:0:2-6 ea.)
- 511. Introduction to Theoretical Physics.** (3:3:0) Prerequisite: Math. 434 or equivalent.
Basic principles of physics with emphasis on their mathematical formulation. Topics treated vary from year to year.
- 513R. Special Topics in Contemporary Physics.** (1-3:1-3:0 ea.) Prerequisite: consent of instructor.
Course content and scheduling vary from year to year. Subject matter will usually be related to recent developments in physics.
- 517, 518. Mathematical Physics.** (3:3:0 ea.) Prerequisite: Physics 318 or equivalent. Recommended: Math. 542.
Topics in modern theoretical physics including applications of matrix and tensor analysis and linear differential and integral operators.
- 527, 528. Introduction to Astrophysics.** (3:3:0 ea.) Prerequisite: consent of instructor.
Fundamental principles and observational techniques of astrophysics.
- 529. Observational Astrophysics.** (3:3:0) (Offered on sufficient demand) Prerequisites: Physics 527 and 528.
Survey of important areas of current research in modern observational astrophysics.
- 536, 537. Space and Planetary Physics.** (3:3:0 ea.) (Offered on sufficient demand) Prerequisite: consent of instructor.
Topics will include solar physics, interplanetary fields, atmospheres of earth and other planets.
- 551. Elements of Quantum Theory.** (3:3:0) Prerequisites: Physics 221 and Math. 434 or equivalents.
Analytical foundations of quantum mechanics; applications from atomic and molecular spectroscopy, quantum statistics, solid state physics, etc.
- 552. Elements of Nuclear Theory.** (3:3:0) Prerequisite: Physics 551 or equivalent.
Foundations of nuclear physics considered in a quantum theory context; nuclear scattering, radioactivity, nuclear reactions, nuclear models, elementary particles, etc.
- 555. Nuclear Reactor Physics.** (3:3:0) Prerequisite: Chem. Eng. 582 or consent of instructor.
Introduction to neutron physics in multiplying and nonmultiplying media; diffusion and slowing down of neutrons; multigroup reactor theory.
- 557. Nuclear Reactor Physics Laboratory.** (1:1:2) Prerequisite: Physics 555.
Laboratory experiments in neutron and nuclear reactor physics; reactor flux and importance, cross-section, neutron age, and diffusion parameter measurements.
- 561. Fundamentals of Acoustics.** (4:4:0)
General consideration of the generation, transmission, and reception of sound. Discussion of vibrating systems, properties of elastic media, mechanical and electrical energy, and radiation.
- 562. Acoustical Measurements.** (2:0:4) Prerequisite: completion of or concurrent registration in Physics 561.
Selected experiments in acoustics.

- 565R. Acoustics of Music and Speech.** (3:3:0 ea.) (Offered on sufficient demand)
Prerequisite: Physics 561 or consent of instructor.
Content alternates between topics in music and topics in speech. Sound production and perception; techniques for analysis and synthesis; computer modeling; machine recognition; ensemble effects.
- 566R. Architectural Acoustics and Noise.** (3:3:0 ea.) (Offered on sufficient demand)
Prerequisite: Physics 561 or consent of instructor.
Content alternates between topics in architectural acoustics and topics in noise. Computer modeling of enclosures; techniques for measuring noise spectra; room design; noise control.
- 581. Introduction to X-Ray Diffraction Analysis.** (3:2:3) (Offered on sufficient demand)
Prerequisite: consent of instructor.
Introduction to the theory and experimental techniques of X-ray diffraction, including an introduction to crystal geometry.
- 582. X-Ray Crystallography.** (3:2:3) (Offered on sufficient demand)
Prerequisite: Physics 581 or equivalent.
Introduction to X-ray crystallography, with emphasis on the space groups, and structure-dominated crystal physics.
- 591R. Seminar.** (1:1:0)
Required of all graduate students every semester in residence.
- 611, 612. Astrophysics.** (3:3:0 ea.) (Offered on sufficient demand)
Prerequisite: consent of instructor.
The theory of stellar atmospheres and interstellar matter.
- 617. Advanced Topics in Theoretical Physics.** (3:3:0) (Offered on sufficient demand)
Applications of tensor analysis, differential geometry, and differential forms to various topics in physics such as mechanics, optics, relativity, and fluid dynamics.
- 618. Advanced Topics in Theoretical Physics.** (3:3:0) (Offered on sufficient demand)
Symmetry principles in quantum physics emphasizing group theory with applications to solid state, nuclear physics, relativity, and quantum field theory.
- 621. Dynamics.** (3:3:0) Prerequisite: Physics 322.
Advanced treatment of classical mechanics, including Lagrange's and Hamilton's equations, rigid body motion, and canonical transformations.
- 623. Dynamics of Continuous Media.** (3:3:0) (Offered on sufficient demand)
Prerequisite: Physics 621.
The mechanics of systems with an infinite number of degrees of freedom. Topics include elasticity and hydrodynamics.
- 625. Theory of Relativity.** (3:3:0) (Offered on sufficient demand)
Prerequisite: Physics 621.
Review of special relativity. General relativity, with applications to modern astrophysics.
- 626. Relativistic Astrophysics.** (3:3:0) (Offered on sufficient demand)
Prerequisite: Physics 625.
Applications of general relativity to modern astrophysics, including gravitational collapse, black holes, cosmological models, gravitational waves, etc.
- 627, 628. Advanced Topics in Astrophysics.** (3:3:0 ea.) (Offered on sufficient demand)
Prerequisite: consent of instructor.
Internal structure of stars; galactic structure.
- 631, 632. Statistical Mechanics.** (3:3:0 ea.)
Advanced thermodynamics; classical statistical mechanics, quantum statistics, transport theory.

- 641, 642. **Mathematical Theory of Electricity and Magnetism.** (3:3:0 ea.) Prerequisite: Physics 342.
Advanced electrostatics and magnetostatics; Maxwell's equations and electromagnetic waves; relativistic electrodynamics, radiation theory, interaction of matter with electromagnetic fields.
- 645, 646. **Plasma Physics.** (3:3:0 ea.) (Offered on sufficient demand) Prerequisites: Physics 431, 621, and 642.
A study of the plasma state of matter, including a description both in terms of individual particles and in terms of a fluid, with applications.
- 651, 652. **Quantum Mechanics.** (3:3:0 ea.) Prerequisites: Physics 518, 551.
Nonrelativistic quantum mechanics logically developed, with applications.
- 655, 656. **Nuclear Physics.** (3:3:0 ea.) (Offered on sufficient demand) Prerequisite: Physics 552.
Fundamental properties of nuclei, nuclear forces, nuclear models, electromagnetic properties of nuclei, particle radioactivity, nuclear reactions, and interaction of radiation with matter.
671. **Atomic and Molecular Spectroscopy.** (3:3:0) (Offered on sufficient demand) Prerequisite: consent of instructor.
Series and multiplet atomic spectra and rotational, vibrational and electronic band spectra; determination of atomic and molecular structure.
672. **Observation and Analysis of Spectra.** (3:1:4) (Offered on sufficient demand) Prerequisite: Physics 671 or consent of instructor.
Analysis of optical spectra with instrumentation and experimentation, including stellar spectroscopic techniques.
- 681, 682. **Modern Theory of Solid State.** (3:3:0 ea.) Prerequisite: Physics 431 and 551.
An introductory course for students in physics, chemistry, and engineering. Physical properties of atomic and molecular systems which are arranged in a regular periodic structure.
- 697R. **Research.** (Arr. ea.)
699. **Research and Thesis for Master's Degree.** (6-9:Arr.:Arr.)
- 711R. **Advanced Topics in Physics.** (1-3:3:0 ea.) Prerequisite: consent of instructor.
Course content varies from year to year. Special topics in theoretical and experimental physics are treated.
- 751, 752. **Advanced Quantum Theory.** (3:3:0 ea.) (Offered on sufficient demand) Prerequisite: Physics 652 or consent of instructor.
Topics in relativistic quantum mechanics, including quantum field theory.
- 797R. **Research.** (Arr. ea.)
799. **Research and Dissertation for Ph.D. Degree.** (Arr.)

Political Science

Distinguished Professor: Grow.

Professors: Hickman, Hillam (chairman, 270 MSRB), Mabey, Melville, Midgley, Reeder.

Associate Professors: Buckwalter (graduate coordinator, 430 MSRB), Farnsworth, Morrell, Slover, Snow, Sorensen, Taylor, Tullis.

Program: Master of Arts (M.A.).

Entrance Examinations Required: Graduate Record Examination (general and political science sections).

Application Consideration Dates: July 30 for Fall Semester, December 1 for Winter Semester, April 10 for Spring Term, June 15 for Summer Term.

Entry Times: Any regular registration.

Master of Arts

Prerequisites: The equivalent of 15 undergraduate semester hours in political science.

Fields: Political theory and philosophy, American political systems, comparative political systems, international politics.

Requirements: 25 semester hours plus thesis (6-hr. min.—699).

Required Courses: Pol. Sci. 501, 502, 508 (or equivalents); 645R for two semesters; two seminars.

Courses

- 300. Political Inquiry.** (3:2:1) Prerequisites: Pol. Sci. 110, 150; completion of or concurrent registration in Pol. Sci. 170.
Systematic treatment of methodology in political science, including theory and techniques of qualitative and quantitative research designs.
- 310. The United States Political System.** (3:3:0) Prerequisite: Pol. Sci. 110.
Buckwalter, Grow, Melville
Systematic inquiry into the national government and politics of the U.S. in the context of American society as a whole.
- 311. State and Local Government and Politics.** (3:3:0) Prerequisite: Pol. Sci. 110.
Grow, Williams
Relation of state and national governments; forms of state governments and politics; types of municipal governments and their operation.
- 330. Introduction to Public Administration.** (3:3:0) Grow, Slover
Organization and operation of government. Relationship of administration of other branches of government; types of control over administration.
- 350. Political Systems of the USSR and Eastern Europe.** (3:3:0) Recommended: Pol. Sci. 150 or Hist. 330 or 331.
Mabey, Morrell
The Communist Party and Soviet government; Marxist-Leninist ideology; formulation and execution of policy, including social and economic impacts.
- 355. Political Systems of United Kingdom and Commonwealth.** (3:3:0) Recommended: Pol. Sci. 150.
Mabey
Development of the Constitution, the Crown, Parliament, Civil Service; local administration, Cabinet judicial system, and the Commonwealth.
- 359. Modernization and Political Change.** (3:3:0) Recommended: Pol. Sci. 150.
Tullis
Analytical and comparative approach to the nature and causes of political change and stability in Asia, the Middle East, Africa, and Latin America.
- 360. Constitutional Law of the U.S. I.** (3:3:0) Reeder, Williams
American federal system.
- 361. Constitutional Law of the U.S. II.** (3:3:0) Reeder, Williams
Fundamental rights and immunities.
- 370. Theory of International Relations.** (3:3:0) Prerequisite: Pol. Sci. 170. Recommended: Pol. Sci. 300.
Hillam
Approaches to the study of actions and interactions of national systems.
- 371. Contemporary U.S. Foreign Relations.** (3:3:0) Recommended: Pol. Sci. 110.
Buckwalter, Hickman
Emergence of the United States as a world power and its impact upon the other major powers and representative smaller countries.

- 375. International Organizations.** (3:3:0) Prerequisite: Pol. Sci. 170. Recommended: Pol. Sci. 300. Taylor
Survey of process of international organizations in historical and political perspective.
- 380. World Communism.** (3:3:0) Morrell
Emergence and development of Communist politics in relation to Marxist and Fabian socialism, fascism, anticolonialism, and Western democracy.
- ☐ **History 384. U.S. Diplomatic History.** (3:3:0) Melville
- 402. Introduction to Political Philosophy.** (3:3:0) Midgley, Sorensen
General historical introduction to the major expressions of political philosophy.
- 423. Minority Group Politics in America.** (3:3:0) Tullis
Changing role of minority groups in contemporary American politics. Sources of political cleavage and patterns of conflict resolution.
- 457. Government and History of Canada.** (3:3:0) Grow
Growth and development of Canada and the operation of her government.
- 501. Ancient Political Philosophy.** (3:3:0) Midgley, Sorensen
The history of political philosophy, beginning with the pre-Socratics and ending with Hobbes.
- 502. Modern Political Philosophy.** (3:3:0) Midgley, Sorensen
The history of political philosophy, beginning with Hobbes and ending with the recent revival of political philosophy.
- 503. Contemporary Political Philosophy.** (3:3:0) Midgley, Sorensen
Survey of the attack upon political philosophy by political theorists, and the various attempts to revive it by philosophers and theologians.
- 504. The Logic of Political Inquiry.** (3:3:0) Sorensen
Analyzes comparatively the logic of scientific and normative inquiry and the logical structure of the products of such inquiry.
- 506. American Political Thought.** (3:3:0) Melville
American political and legal ideas from the colonial period to the present.
- 508. Empirical Political Theory.** (3:3:0) Prerequisite: major in political science; to be taken semester prior to Graduate Record Examination. Buckwalter
Background, development, and critique of empirical theories about systems, functionalism, elites, etc., in the political process.
- 510. Parties and Pressure Groups in the U.S.** (3:3:0) Prerequisite: Pol. Sci. 110. Grow
Organization and methods of action of American political parties and pressure groups.
- 511. Urban Government.** (3:3:0)
Development, organization, dynamics, and problems of urban government.
- 512. Public Policy.** (3:3:0) Recommended: Pol. Sci. 310 and 511.
A treatment of contemporary public problems identification, the processes of policy formulation and legitimization, and implementation and evaluation of public policies.
- 514. The United States Presidency.** (3:3:0) Melville
The American president and vice-president, White House Office, Bureau of the Budget, Cabinet, and National Security Council.
- 520. American Legislative Systems.** (3:3:0) Prerequisite: Pol. Sci. 110. Buckwalter, Grow
Structure and organization of Congress and state legislative bodies; nature of business transacted and conflict resolution.

- 523. Intergovernmental Relations in the United States.** (3:3:0) Prerequisites: Pol. Sci. 310 and 311.
A survey of major programs and trends; emphasis on organizational, administrative, and fiscal relationships.
- 525. The Military in Government and Politics.** (3:3:0) Prerequisites: Pol. Sci. 310 and 370. Slover
Strategic alternatives for defense which affect politics, economics, and foreign relations; and the role of the military abroad.
- 550. Political Systems of France and Germany.** (3:3:0) Mabey, Morrell
Emphasis on the contemporary political systems of France and West Germany; comparisons with Switzerland, East Germany, and Scandinavia.
- 551. Political System of China.** (3:3:0) Recommended: Pol. Sci. 150 or Hist. 343 or 344. Farnsworth
Comparative analysis of the Communist Chinese political system within the context of the total social system.
- 552. Political System of Japan.** (3:3:0) Recommended: Pol. Sci. 150 or Hist. 345 or 346. Farnsworth
Comparative analysis of the Japanese political system within the context of the total social system.
- 553. Political Systems of the Middle East.** (3:3:0)
Analysis of governmental institutions of the Middle East with emphasis on the structure and dynamics of modern Middle Eastern politics.
- 556. Modernization and Political Change in South America.** (3:3:0) Recommended: Pol. Sci. 359 or consent of instructor. Tullis
Analytical and comparative approach to the relation of economic development and political change, and the impact of social forces on political order.
- 557. Modernization and Political Change in Mexico and the Caribbean.** (3:3:0) Recommended: Pol. Sci. 150, 359, or equivalent. Tullis
Analytical and comparative approach to the relation of economic development and political change, and the impact of social forces on political order.
- 558. Modernization and Political Change in Asia.** (3:3:0) Recommended: Pol. Sci. 150 and/or 359. Farnsworth, Hillam
Analysis of selected political systems of Asia (excluding China and Japan), utilizing developmental and comparative methodology.
- 563. Administrative Law of the U.S.** (3:3:0) Reeder
Legal setting for administrative bodies and judicial control of administrative action. Cases in administrative law read and discussed.
- 564. Jurisprudence.** (3:3:0) Midgley, Reeder
Problem approach to ancient and modern legal philosophies, with special attention given to nature of justice and the relation of law to morality.
- 568. Anglo-American Legal Institutions.** (3:3:0) Reeder
Origins and development of common law and equity, the writ system, court systems, basic legal terms, and the anatomy of a lawsuit.
- 570. Formulation of American Foreign Policy.** (3:3:0) Hickman
The structure and function of American national government and politics relating to the formulating of foreign policy.
- 572. USSR Foreign Relations.** (3:3:0) Recommended: Pol. Sci. 170, 350, 370, or Hist. 330 or 331. Morrell
Development of foreign relations since 1945 with major areas of the world; the policies, their formulation and implementation.
- 573. International Relations of Western Europe.** (3:3:0) Hickman
Study of the transitional role of Western Europe in world politics, with emphasis upon integration and defense.

- 575. International Law.** (5:5:0) Reeder
Nature and function of international law; recognition, succession, jurisdiction rights, and immunities of states; nationality and jurisdiction over nations.
- 576. Regional International Systems.** (3:3:0) Taylor
The study of regional international systems: defense, social and economic; relationship with world systems.
- 578. International Relations of Latin America.** (3:3:0) Recommended: Pol. Sci. 170 and 359. Tullis
Political, economic, and cultural problems that arise from the relationships between the nations of Latin America and the United States.
- 580. International Relations of Asia.** (3:3:0) Recommended: Pol. Sci. 170 and/or 370 or Hist. 341. Hillam
Analysis of the forces and issues which influence the international system of Asia.
- 645R. Graduate Colloquium.** (½:1:0 ea.) Buckwalter
Required of all graduate students each semester in residence.
- 690R. Seminar in Political Theory.** (1-3:1-3:0 ea.) Prerequisite: related advanced course(s). Melville, Midgley, Sorensen
- 691R. Seminar in Politics.** (1-3:1-3:0 ea.) Prerequisite: related advanced course(s). Buckwalter, Grow, Melville, Slover
- 695R. Seminar in Foreign Governments and Comparative Politics.** (1-3:1-3:0 ea.) Prerequisite: related advanced course(s). Farnsworth, Mabey, Morrell, Tullis
- 696R. Seminar in Public Law.** (1-3:1-3:0 ea.) Prerequisite: related advanced course(s). Reeder, Williams
- 697R. Seminar in International Relations.** (1-3:1-3:0 ea.) Prerequisite: related advanced course(s). Hickman, Hillam, Taylor
- 698R. Directed Readings in Political Science.** (1-2:1-2:0 ea.) Prerequisite: permission of graduate committee and instructor.
- 699. Thesis for Master's Degree.** (6-9:Arr.:Arr.)

Psychology

Professors: Allen, Bennion, Cooper, Daniels, Fleming, Hardy, Howell (graduate coordinator, 212 EDLC), Moffitt, Pedersen (chairman, 1230-A SFLC), B. Robinson, Smith.

Associate Professors: Bunker, Cundick, Jensen, Payne, Stimpson, Thorne.

Assistant Professors: Brown, Higbee, Jenkins, Lambert, P. Robinson, Sorenson, Weight.

Special Instructors: Kiger, Washburn.

Programs:

School Psychology: Master of Science (M.S.).

General Psychology: Doctor of Philosophy (Ph.D.).

Clinical Psychology: Doctor of Philosophy (Ph.D.).

Instructional Psychology: Doctor of Philosophy (Ph.D.).

Entrance Examinations Required: None.

Application Consideration Dates: March 1 (and July 15 to fill the remaining available positions, if any).

Entry Times: Fall Semester (exceptional cases may be considered for Winter Semester and Spring and Summer terms).

Master of Science: School Psychology

(Interdisciplinary program jointly offered by the departments of Psychology and Educational Psychology)

Prerequisites: Bachelor's degree, including courses in general psychology, and elementary psychological statistics, experimental psychology, and three courses chosen from sensation and perception, motivation, personality, and principles of learning or their equivalent.

Minors Permissible: Option II only.

Requirements: Minimum of 42 semester hours plus thesis (6-hr. min.—699).

Required Courses:

Fall Semester, first year
Ed. 665C
Psych. 640, 670, 680
Stat. 552*

Winter Semester, first year
Ed. 647, 660,* 667
Psych. 641, 690

Fall Semester, second year
CDFS 570

Ed. 470, 672

5 hours selected from—

Ed. 468, 565, 570, 646, 657,
665A, 665B, 668, 674A,
674B;

Psych. 520, 526, 550, 560,
585

Winter Semester, second year

Ed. 680R, 699*

Psych. 699

*Those students who are officially registered in the Department of Psychology will not take the asterisked courses.

Note: Most states require the certification of practicing school psychologists. Early in the student's program he should consult the certification requirements for the state or states in which he may wish to work. These requirements vary widely. The above courses offer a solid core of training; however, most states have special requirements that should be taken into account when planning the graduate program. A file of many states' requirements is maintained at the Psychology Clinic, 257 EDLC.

Professional Preparation: Preparation for work in school districts as a school psychologist.

Doctor of Philosophy: General Psychology

Prerequisites: Bachelor's degree, including courses in general psychology, elementary psychological statistics, experimental psychology, and three courses chosen from sensation and perception, motivation, personality, and principles of learning or their equivalent. Tool requirement: Option I, II, III, or IV is acceptable. If Option III is used, the tool subject will be computer science (Comput. Sci. 130, 231, and Psych. 570). If Option IV is used, the tool subject will be computer science (Math. 112; Comput. Sci. 131 or 231, 571; Psych. 570 and 672 or 673; and one class from Stat. 433, 531, 534, or 536).

Fields: Social psychology, experimental psychology.

Minors Permissible: Any approved minor.

Requirements: Minimum of 54 semester hours plus dissertation (18-hr. min.—799). Completion of courses with a minimum grade of B- in each course and an overall GPA of 3.2 in all courses.

Required Courses: Psych. 520, 530, 550, 560, 565, 585, 610, 670, 671, and 690. In addition, students in social psychology must take Psych. 555, 630, 792R; Sociol. 552; Org. Behav. 672 and 675.

Professional Preparation: University and college positions, organizational consultation, and research.

Doctor of Philosophy: Clinical Psychology

Prerequisites: Bachelor's degree, including courses in general psychology, elementary psychological statistics, experimental psychology, personality, learning, abnormal psychology, and sensation and perception or motivation (equivalent course content is acceptable). Tool requirements: Option I, III, or IV is acceptable. If Option I is desired, petition must be filed stating the usefulness of this language in the specific clinical work that is anticipated. If Option III is used, the tool subject will be computer science (Comput. Sci. 130, 231, and Psych. 570). If Option IV is used, the tool subject will be computer science (Math. 112; Comput. Sci. 131 or 231, 571; Psych. 570 and 672 or 673; and one class from Stat. 433, 531, 534, or 536).

Minors Permissible: Minimum of 15 hours as established by the advisory committee. The minor will be the specialization within the field of clinical psychology, such as clinical research, community psychology, mental retardation, criminal psychology, or advanced specialization in psychotherapy and psychodiagnostics. Normally the minor examination will be given following the completion of the internship.

Requirements: Minimum of 71 semester hours plus dissertation (18-hr. min.—799). One year's internship. Completion of courses with a minimum grade of B- in each course and an overall GPA of 3.2 in all courses.

Required Courses: The following core courses: Psych. 520, 530, 560, 565, 585, 610, 670, and 671. Completion of the following courses in the sequence as listed:

Fall Semester, first year
Psych. 640, 645, 670, 784R,
and one graduate core
course as outlined above

Fall Semester, second year
Psych. 642, 681, and two
graduate core courses as
outlined above

Fall Semester, third year
Psych. 690, 740R
Elective courses for minor
specialization

Winter Semester, first year
Psych. 641, 671, 680, 784R,
and one graduate core
course as outlined above

Winter Semester, second year
Psych. 675, 682, and two
graduate core courses as
outlined above

Winter Semester, third year
Psych. 740R
Elective courses for minor
specialization

Professional Preparation: College and university positions, mental health centers, hospitals, and mental health program evaluation.

Doctor of Philosophy: Instructional Psychology

(Interdisciplinary program jointly offered by the departments of
Psychology and Educational Psychology)

For information concerning this developing program, please communicate directly with the Department of Psychology or the Department of Educational Psychology.

Courses

- 510. **Psychology of Aesthetics.** (2:2:0) Prerequisite: Psych. 111.
- 520. **Advanced Developmental Psychology.** (3:3:0)
- 526. **Mental Retardation.** (2:2:0) Prerequisite: Psych. 378 or equivalent.
- 530. **Theory and Research in Social Psychology.** (3:3:0) Prerequisite: Sociol.-Psych. 350.

550. **Personality Theory.** (3:3:0) Prerequisites: Psych. 111, 450, and five additional hours in psychology.
555. **(Sociol.-Psych.) Group Dynamics.** (3:3:0) Prerequisite: Sociol.-Psych. 350.
560. **Learning Theory.** (3:3:0) Prerequisites: Psych. 111, 460, and five additional hours in psychology.
561. **Psycholinguistics.** (3:3:0) Prerequisite: Psych. 111.
562. **Perception and Cognition.** (3:3:0) Prerequisites: Psych. 360, 362, or equivalent; graduate standing or consent of instructor.
565. **Motivational Psychology.** (3:3:0) Prerequisites: Psych. 365 or equivalent; graduate standing or consent of instructor.
570. **Computer Use in Behavioral Sciences.** (3:3:6) Prerequisites: Psych. 370; Comput. Sci. 231; or equivalent.
574. **Advanced Experimental Psychology.** (2:1:5) Prerequisites: Psych. 111, 374, or equivalent.
580. **Comparative Psychology.** (3:3:0) Prerequisite: Psych. 111.
583. **Behavior Modification Techniques.** (3:2:2)
585. **Advanced Physiological Psychology.** (3:3:0) Prerequisite: Psych. 111.
- 597R. **Independent Research.** (1-3:0:2-6 ea.)
610. **History and Systems of Psychology.** (3:3:0) Prerequisite: graduate standing.
628. **Psychology of the Physically Handicapped.** (2:2:0) Prerequisite: Psych. 378.
630. **Attitude Change.** (3:3:0) Prerequisite: graduate standing or consent of instructor.
640. **Psychodiagnostics I: Intelligence Testing.** (3:3:5) Prerequisites: Psych. 378 or Ed. 645 and consent of instructor.
641. **Psychodiagnostics II: Child and Adolescent.** (3:2:6) Prerequisite: Psych. 640.
642. **Psychodiagnostics III: Adult.** (3:2:3) Prerequisites: Psych. 550 and 640.
644. **Rorschach Techniques.** (3:2:5) Prerequisite: Psych. 643.
645. **Issues in Clinical Psychology.** (3:3:0) Prerequisite: major or minor in psychology.
646. **Community Mental Health.** (3:2:2) Prerequisite: at least second-year graduate standing in the Department of Psychology.
651. **Psychopathology.** (3:3:2) Prerequisite: nine hours in psychology.
654. **Dynamics of Religious Behavior.** (3:3:0) Prerequisite: Psych. 111.
662. **Complex Thought Processes.** (3:3:0) Prerequisite: Psych. 360.
665. **Human Motivation.** (3:3:0) Prerequisites: Psych. 365 or equivalent; graduate standing in psychology or allied discipline.
670. **Advanced Statistics I.** (3:3:2) Prerequisite: Psych. 370.
671. **Advanced Statistics II.** (3:3:2) Prerequisite: Psych. 670.
672. **Psychological Scaling.** (3:3:0) Prerequisite: Psych. 670.
- Org. Behav. 672. The Consultative Process.** (3:3:0)
673. **Multivariate Analysis in Psychology.** (3:3:0) Prerequisite: Psych. 670.
675. **Personality Dynamics.** (3:3:0) Prerequisites: undergraduate core courses and consent of instructor.

- Org. Behav. 675. Theory and Method of Laboratory Training.** (3:2:2)
- 678. Measurement Theory.** (3:3:0)
- 680. Psychotherapy I: Child and Family.** (3:3:3) Prerequisites: undergraduate core courses and consent of instructor.
- 681. Psychotherapy II: Adult.** (3:3:0) Prerequisites: undergraduate core courses and consent of instructor.
- 682. Psychotherapy III: Group.** (3:1:6) Prerequisite: Psych. 680.
- 683. Behavior Modification Therapy.** (3:2:1) Prerequisites: Psych. 460, 680; or equivalent. Thorne
- 690. Seminar: Research Problems.** (2:2:0)
- 695R. Independent Readings.** (1-2:Arr.:Arr. ea.)
- 699. Master's Thesis.** (6-9:Arr.:Arr.)
- 740R. Clinical Practicum.** (3:0:8 ea.) Prerequisite: Psych. 680.
- 741R. Practicum in Assessment.** (3:0:8 ea.) Prerequisites: Psych. 642, 643.
- 742R. Projects in Clinical Psychology.** (3:0:8 ea.) Prerequisite: Psych. 682.
- 749R. Clinics Practicum.** (1-2:0:3-6 ea.) Prerequisites: Psych. 640, 680; graduate standing or consent of instructor.
- 750, 751, 752, 753. Clinical Internship.** (0:0:32 ea.)
- 784R. Sensitivity Training.** (0:0:3 ea.)
- 790R. Seminar: Developmental.** (2:2:0 ea.) Prerequisite: consent of instructor.
- 791R. Seminar: Personality.** (2:2:0 ea.) Prerequisite: consent of instructor.
- 792R. Seminar: Social Psychology.** (2:2:0 ea.) Prerequisites: consent of instructor; Sociol.-Psych. 350.
- 793R. Seminar: Perception and Cognition.** (2:2:0 ea.) Prerequisite: consent of instructor.
- 794R. Seminar: Motivation.** (2:2:0 ea.) Prerequisite: consent of instructor.
- 795R. Seminar: Learning.** (2:2:0 ea.) Prerequisite: consent of instructor.
- 796R. Seminar: Clinical Psychology.** (2:2:4 ea.) Prerequisite: consent of instructor.
- 797R. Independent Research.** (1-4:0:3-12 ea.) Prerequisite: consent of instructor.
- 799. Ph.D. Dissertation.** (Arr.)

Recreation Education

Professors: Hartvigsen, I. Heaton, Jensen, Shaw (college coordinator, 221-F RB).
Associate Professors: Call, de Hoyos, Hafen (chairman, 273-C RB), Packer.
Assistant Professors: Olsen, Rogers, Thorstenson.

Programs: Master of Arts (M.A.), Master of Recreation Education (M.R.Ed.).

Entrance Examination Required: Cooperative English Test 2A, "Effectiveness of Expression."

Application Consideration Dates: Same as Graduate School deadlines.

Entry Times: Any regular registration.

Master of Arts

Prerequisites: Undergraduate major or minor in recreation. Upon special permission, students may be admitted with other undergraduate work but must complete 8 hours of selected prerequisite classes.

Fields: Community school leadership, municipal recreation administration, outdoor recreation, therapeutic recreation.

Minors Permissible: Option I.

Requirements: Minimum of 24 semester hours plus thesis (6-hr. min.).

Required Courses: Community school option: Rec. Ed. 585, 605, 679R, 692, 695; Sociol. 471; and Ed. 675. All other options: Rec. Ed. 609, 692, and 696; P.E. 662; and a statistical methods class.

Master of Recreation Education

Prerequisites: Undergraduate major or minor in recreation. Upon special permission, students may be admitted with other undergraduate work but must complete 8 hours of selected prerequisite classes.

Fields: Community school leadership, municipal recreation administration, outdoor recreation, therapeutic recreation.

Minors Permissible: Option I.

Requirements: Minimum of 32 semester hours plus field project (2-hr. min.).

Required Courses: Community school option: Rec. Ed. 585, 605, 679R, 692, 695; Sociol. 471; and Ed. 675. All other options: Rec. Ed. 609, 692, and 696; P.E. 662; and a statistical methods class.

Courses

- 502R. Camping Workshop.** (2:2:4 ea.) Fee required. Hansen, Packer
Features training and preparations for a week of laboratory experience in a primitive area.
- 503. Administration of School and Community Camps.** (2:2:0) Hansen
Administration of camps and outdoor programs, site selection and development, and program planning and staffing.
- 505. Administration of Community Recreation.** (3:3:0) Prerequisites: Rec. Ed. 301, 337.
Facilities, personnel, financing, budget, legal aspects, and departmental organization as it relates to community recreation.
- 570. Therapeutic Recreation for Neurological Handicaps.** (2:2:0) Prerequisites: Rec. Ed. 370, 470, or equivalent.
Recreation programs in school, community, and hospital settings for individuals with neurological and other handicaps.
- 583. Workshop in Recreational Dance.** (1-2:0:40-80) A. Heaton
Advanced techniques for teaching dance to recreation groups.
- 585. The Community School.** (2:2:1) I. Heaton, Olsen
Basic concepts of the community school, including its history, organization, funding, leadership, facilities, and value to the community.
- 605. Community School Administration.** (2:2:0) Prerequisite: Rec. Ed. 585.
I. Heaton, Rogers
Analysis of administrative problems related to leadership, organization, finance, legal aspects, and public relations.
- 609. The Recreation Program.** (2:2:0) Thorstenson
Analysis and design of community and agency recreation programs.

- 670. Problems in Recreation for the Neuropsychiatric Patient.** (2:2:0) Pre-requisites: Rec. Ed. 370, 470, or equivalent. Call
Programming for resident, day-care, and out-patient facilities for emotionally or psychologically disturbed patients.
- 671. Therapeutic Recreation in Rehabilitation.** (2:2:0) Prerequisites: Rec. Ed. 370, 470, or equivalent. Thorstenson
The rehabilitation team and the relationship of the recreation therapist to other team members.
- 679R. Internship in Community School Leadership.** (6:2:20 ea.)
I. Heaton, Olsen, Rogers
Students are assigned to work with experienced community school directors where they gain practical experience.
- 692. Research Methods in Recreation.** (3:3:0) Shaw
Includes preparation of the research proposal and guidelines to writing the thesis.
- 694. Seminar in Readings.** (2:2:0) Hafen
Readings from professional literature. Includes group discussion of pertinent materials.
- 695. Seminar in Community-School Recreation.** (2:2:0) I. Heaton, Olsen
How the community and the school join forces to organize, finance, program, and provide leadership for a community recreation program.
- 696. Seminar in Problems in Recreation.** (1:1:0) Hafen
- 698. Field Project.** (1-4:2-5:0) Hafen
- 699. Thesis for Master's Degree.** (6-9:Arr.:Arr.) Hafen

Religious Instruction: Ancient Scripture

Professors: R. L. Anderson, Clark, Ludlow, Nibley, Patch (chairman, 122 JSB), Rasmussen, Sperry (emeritus).

Associate Professors: Cheesman, Pearson, H. D. Peterson, Ricks.

Assistant Professors: Harris, Matthews, Nyman.

Program: Master of Arts (M.A.).

Entrance Examinations Required: None.

Application Consideration Dates: Same as Graduate School deadlines.

Entry Times: Any regular registration.

Master of Arts

Prerequisites: There is no undergraduate major in scriptural studies. It is recommended that wherever possible undergraduates get a strong background through course work and study in the scriptures. It is also very desirable that students intending to pursue a master's program in New Testament develop reading proficiency in Greek as undergraduates. For Old Testament, reading proficiency in Hebrew is highly desirable.

Fields: Old Testament, New Testament, Book of Mormon.

Minors Permissible: Option I or Option II.

Requirements: Minimum of 24 semester hours plus thesis (6-hr. min.—699); one approved foreign language; written comprehensive examination.

Required Courses: Three sequence courses in the field of emphasis.

This program is designed primarily to serve the needs of the LDS seminary and institute teachers.

Some students may be interested in applying course work from this department toward either the master's or the doctor's degree in the proposed new inter-departmental Institute of Ancient Studies. Information about it may be requested from the dean of the Graduate School, from the chairman of the Department of Ancient Scripture, or from the chairman of other participating departments.

Courses

- 501. Analysis of the Old Testament: Pentateuch and Historical Books. (3:3:0)
- 502. Analysis of the Old Testament: Prophetic Books. (2:2:0)
- 503. Analysis of the Old Testament: Poetic and Wisdom Literature. (2:2:0)
- 511. The Gospels. (2:2:0)
- 512. Paul's Life and Letters. (2:2:0)
- 513. The General Epistles and the Apocalypse. (2:2:0)
- 514. New Testament Times. (2:2:0)
- 521. Analysis of the Book of Mormon I. (3:3:0)
- 522. Analysis of the Book of Mormon II. (3:3:0)
- 523. External Evidences of the Book of Mormon. (2:2:0)
- 527. History and Doctrines of the Pearl of Great Price. (3:3:0)
- 604. Origins of the Old Testament. (3:3:0)
- 606. The Apocrypha and Pseudepigrapha. (2:2:0)
- 608R. Readings in Old Testament Studies. (1-6:1-2:0 ea.)
- 609R. Seminar: Old Testament. (1-6:1-2:0 ea.)
- 610. Early Christian Literature. (2:2:0)
- 611. Formation of the New Testament: Text and Canon. (2:2:0)
- 612. Textual Criticism of the New Testament. (2:2:0)
- 618R. Readings in the New Testament. (1-6:1-2:0 ea.)
- 619R. Seminar: New Testament. (1-6:1-2:0 ea.)
- 621R. Seminar: Book of Mormon. (1-6:1-2:0 ea.)
- 627R. Seminar: Pearl of Great Price. (1-6:1-2:0 ea.)
- 699. Thesis for Master's Degree. (6-9:Arr.:Arr.)

Religious Instruction: Church History and Doctrine

Professors: Andrus, Backman, Barron, L. Berrett (chairman, 123 JSB), W. E. Berrett, Burton, Cowan, Doxey, Horsley, Palmer, Rich, Turner.

Associate Professors: G. Anderson, Bowen, Fugal, Hartshorn, M. Petersen.

Assistant Professors: Garrard, Porter.

Program: Master of Arts (M.A.).

Entrance Examinations Required: None.

Application Consideration Dates: Same as Graduate School deadlines.

Entry Times: Any regular registration.

Master of Arts

Prerequisites: Relig. 341, 342, plus a knowledge of the contents of **The Comprehensive History of the Church**, by B. H. Roberts.

Fields: Christian history, Doctrine and Covenants, LDS history, theology, world religions.

Minors Permissible: Option I or Option II.

Requirements: One approved foreign language, if the field is Christian history; a minimum of 24 semester hours plus thesis (6-hr. min.—699); successful completion of a written examination on the course work (this examination is administered three times yearly—in October, March, and July).

Required Course: Relig. 540.

Courses

- 524. Analysis of the Doctrine and Covenants I. (3:3:0)
- 525. Analysis of the Doctrine and Covenants II. (3:3:0)
- 530. LDS Theology. (2:2:0)
- 535. Mormonism and Modern Scientific Thought. (2:1:2)
A consideration of problems arising between science and religion.
- 540. Historiography and the Writing of LDS History. (3:3:0)
- 541. Documents of LDS Church History (1820-1839). (3:3:0)
- 542. Documents of LDS Church History (1839-1850). (3:3:0)
- 543. Documents of LDS Church History (1850-1900). (3:3:0)
- 544. Documents of LDS Church History (1900 to Present). (3:3:0)
- 546. Social, Economic, and Political Thought of Joseph Smith. (2:2:0)
- 547. Historical Setting of Mormonism. (3:3:0)
- 551. History of the Early Church to the Fourth Century. (3:3:0)
- 553. Christian Rites and Liturgy. (2:2:0)
- 554. Martin Luther, Forerunner of the Restoration. (2:2:0)
- 555. Comparative World Religions. (2:2:0)
- 556. Comparative World Religions. (2:2:0)
- 557. Religions of the Ancient Near East. (2:2:0)
- 559. The Church in Asia. (2:2:0)
- 570. Survey of Religious Education. (2:2:0)
- 571. Methods of Teaching Religion in Secondary Schools. (2:5:0)
- 572. Methods of Teaching Religion in Secondary Schools. (2:5:0)
- 579A,B,C,D,E. Seminar: Gospel Principles in the Scriptures and Church History. (2:5:0 ea.)
A—Old Testament; B—New Testament; C—Book of Mormon; D—Doctrine and Covenants; E—Church History.

- 595R. **Graduate Seminar.** (1-2:2:0 ea.)
Discussions on religious topics of current interest, primarily for graduate students not majoring in religion.
- 596R. **Graduate Seminar.** (1-2:2:0 ea.)
Discussions on religious topics of current interest, primarily for graduate students not majoring in religion.
- 624R. **Seminar: Doctrine and Covenants.** (1-6:1-2:0 ea.)
- 628R. **Readings in Modern Scripture.** (1-6:1-2:0 ea.)
- 638R. **Readings in Christian Theology.** (1-2:Arr.:0 ea.)
643. **Schismatic Movements in Mormon History.** (2:2:0)
647. **LDS Church History by Travel Study.** (2:Arr.:Arr.)
- 648R. **Readings in LDS Church History.** (1-6:1-2:0 ea.)
- 649R. **Seminar: History of Religion.** (1-6:1-2:0 ea.)
653. **History of the Papacy.** (2:2:0)
654. **Reformation and Counterreformation.** (2:2:0)
657. **Comparative Studies in American Religions.** (3:3:0)
- 658R. **Readings in Christian History.** (1-6:1-2:0 ea.)
- 659R. **Seminar in History of Asian Religions.** (1-6:1-2:0 ea.)
- 668R. **Readings in the History of World Religions.** (1-6:1-2:0 ea.)
671. **Curriculum of Religion in Secondary Schools.** (2:5:0)
672. **Religious Curriculum Building for Secondary Schools.** (2:5:0) Prerequisite: Relig. 671.
673. **Methods of Teaching Religion in College.** (2:5:0)
674. **Methods of Teaching Religion in College.** (2:5:0)
675. **Curriculum of Religion in College.** (2:5:0)
676. **Religious Curriculum Building for Colleges.** (2:5:0) Prerequisite: Relig. 675.
677. **Problems of Teaching Religion.** (1:3:0)
699. **Thesis for Master's Degree.** (6-9:Arr.:Arr.)

Sociology

Professors: Bradford, Christiansen, Duke, Larsen, Peterson (chairman, 184 FOB), Smith, Staley, Symons, Warner.

Associate Professors: Craig, Kunz (graduate coordinator, 179 FOB), Payne, Seggar, Spencer.

Assistant Professors: Blake, Condie, G. DeHoyos, England.

Programs: Master of Science (M.S.), Doctor of Philosophy (Ph.D.).

Entrance Examinations Required: The Graduate Record Examination (including the aptitude test and the advanced test in sociology) and an oral screening examination. The fields in which the oral examination is to be taken are sociological theory, statistics, research methods, and social organization-disorganization.

Application Consideration Dates: April 15 for Fall Semester, October 15 for Winter Semester, and March 15 for Spring Term or Summer Term.

Entry Time: Any regular registration.

Master of Science

Prerequisites: Minimum of 15 semester hours (or equivalent) in sociology, including courses in introductory sociology, statistics, methods of research in sociology, development of sociological theory, and contemporary sociological theory.

Fields: General sociology.

Minors Permissible: Option I or Option II.

Requirements: Minimum of 24 semester hours plus thesis (6-hr. min.—699). An oral preliminary examination is given the student on the prospectus of his thesis prior to the collection of data. Prior to graduation, the student must take a comprehensive written examination covering sociological theory, research methods, social organization, and deviant behavior. If the examination is failed, the student may take it over (only once) within a twelve-month period on any regularly scheduled examination day. The examination is given on December 1, April 1, and July 15.

Required Courses: Sociol. 600, 606, 610, and at least one other seminar.

Doctor of Philosophy

Prerequisite: A master's degree in sociology or the equivalent.

Fields: Deviant behavior, social psychology, research methods, social organization, sociological theory, family sociology, medical sociology, demography, mathematical sociology, rural sociology, urban sociology, sociology of religion, social economic development.

Minors Permissible: Two approved minor fields.

Requirements: Two major fields within sociology, one of which must be research methods. A major field is a field of study in which the student specializes both in respect to teaching and to research.

All students must either major or minor in sociological theory.

The student must pass comprehensive examinations after the completion of prescribed course work and at least one year prior to the granting of the degree. These comprehensive examinations will be given on December 1 and April 1. Unless one minor is selected from another department, the examinations are in four of the above fields of sociology, two of which must be (a) sociological theory and (b) research methods.

An oral preliminary examination is given the student on the prospectus of his dissertation prior to the collection of the data.

Required Courses: All courses required for the Master of Science degree in sociology; Sociol. 706.

Graduate Minor in Sociology

A student working toward a master's degree in another department may complete a minor in sociology by satisfactorily completing Sociol. 610 plus graduate semester hours in areas related to his major specialization, as approved by his advisory committee.

A student working toward a doctoral degree in another department with a minor in sociology must take a preliminary screening examination, after which a committee member from the Department of Sociology, with the approval of the

other members of the department, outlines a program in accordance with the needs of the student. The student may select a minor from the fields listed above and must take the same comprehensive examination given to a student from the Department of Sociology who has chosen to minor in the same field. The examinations are given on December 1 and April 1.

Courses

- 504. Mathematical Sociology.** (3:3:0) (G-SS) Prerequisite: Math. 105. England
Mathematical techniques of simulating and modeling social processes.
- 515. Sociology of Leisure.** (2:2:0) (G-SS) Blake
Recreation and other leisure activities of various social groupings, and factors related to participation in them. (Formerly Sociol. 551.)
- 522. Social Stratification.** (3:3:0) (G-SS) Prerequisite: Sociol. 111.
G. DeHoyos, Duke
Status, power, and class systems in various societies. (Formerly Sociol. 570.)
- 525. Sociology of Religion.** (2:2:0) (G-SS) Home Study also. Seggar, Staley
Influences of social factors in the development of various religious systems. (Formerly Sociol. 516.)
- 526. Sociology of Education.** (2:2:0) (G-SS) Craig, Smith
Social origins of goals and curricula, theories of change and control, and the nature of achievement in education. (Formerly Sociol. 512.)
- 527. Political Sociology.** (3:3:0) (G-SS) Prerequisite: Sociol. 111 or consent of instructor. England
Power and decision making in social groups; social bases of government and political behavior; relationship of governmental institutions to other societal institutions. (Formerly Sociol. 501.)
- 530. (Sociol.-Psych.) Theory and Research in Social Psychology.** (3:3:0) (G-SS) Prerequisite: Sociol.-Psych. 350. Larsen, Seggar
Current theory and research in social psychology, with emphasis on understanding the individual and his interpersonal interaction.
- 535. Social Change and Modernization in Latin America.** (2:2:0) Prerequisite: Sociol. 211 or consent of instructor. Craig, Spencer
Impact of improving communications, social movements, relations with the outside world, population growth, and education on the social structure of Latin America. (Formerly Sociol. 571.)
- 536. Urbanization and Industrialization in Latin America.** (2:2:0) (G-SS) Prerequisite: Sociol. 535 or consent of instructor. Craig, Spencer
Factors which inhibit or enhance urbanization and industrialization in Latin America and their relationship to modernization.
- 537. Rural Social Development in Latin America.** (2:2:0) Prerequisite: Sociol. 111 or 112 or consent of instructor. Craig, Spencer
Planned social change for contemporary peasant and Indian society in private and public rural programs. (Formerly Sociol. 572.)
- 540. The Family Institution.** (2:2:0) Bradford, Christiansen
The family in several different societies and problems created by various family systems. (Formerly Sociol. 560.)
- 545. Demographic Analysis.** (3:3:0) Prerequisite: Sociol. 245. Kunz
(Formerly Sociol. 623.)
- 552. Personality: Culture and Society.** (3:3:0) Prerequisite: Sociol. 111 or Psych. 111. G. DeHoyos, Staley
The role of culture and society in the forming and functioning of personality. Compares various peoples and cultures.
- 555. (Sociol.-Psych.) Group Dynamics.** (3:3:0) Prerequisite: Sociol. 350. England

581. **Seminar in Criminal Behavior Systems.** (2:2:0) Prerequisites: Sociol. 111 and 381. Smith, Symons
Treatment programs for criminals in the light of major theories of crime causation. (Formerly Sociol. 590.)
582. **Seminar in Crime Causation and Treatment.** (2:2:0) Prerequisites: Sociol. 111 and 381. Smith, Symons
Major causes of crime and prevalent theory and techniques of treatment of criminals. (Formerly Sociol. 591.)
- 590R. **Special Topics in Sociology.** (1-3:1-3:0 ea.) (G-SS) Prerequisite: consent of instructor.
- 595R. **Directed Readings.** (1-3:0:2-6 ea.)
- 597R. **Special Research Problems.** (1-3:0:2-6 ea.)
(Formerly Sociol. 561.)
600. **Advanced Research Methods.** (3:3:0) Prerequisite: Sociol. 200 or consent of instructor. Johnson
Investigation of sociological data; field projects. (Formerly Sociol. 597.)
601. **Seminar in Survey Research.** (3:3:0) Prerequisites: Sociol. 200 or equivalent; graduate standing in sociology or allied discipline. Johnson
Survey research as a specific research standard technique of the behavioral sciences, with emphasis on research and sampling designs. (Formerly Sociol. 697.)
606. **Intermediate Statistics.** (3:3:0) Prerequisite: Sociol. 206. England
Hypothesis testing and decision making for sociologists. (Formerly Sociol. 524.)
610. **Seminar in Contemporary Sociological Theory.** (2:2:0) Prerequisites: Sociol. 411 and 412. G. DeHoyos, Duke
Recent developments in theory, including structural-functionalism, conflict theory, general systems theory, exchange theory, and symbolic interactionism. (Formerly Sociol. 690.)
611. **Seminar in Sociological Theory Building.** (2:2:0) Prerequisites: Sociol. 320, 411, and 610. Peterson
(Formerly Sociol. 691.)
612. **Seminar in the Development of Sociological Theory.** (2:2:0) Prerequisite: Sociol. 606. Duke
Contributions of sociological theorists, including Durkheim, Weber, Pareto, and Simmel, to sociological theory development. (Formerly Sociol. 698.)
623. **Problems in Race Relations.** (2:2:0) Chadwick
(Formerly Sociol. 686.)
630. **(Sociol.-Psych.) Attitude Change.** (3:3:0) Prerequisite: graduate standing or consent of instructor. Blake, Larsen
Theoretical approaches to the study of attitude development, change, and assessment, including a focus on both individual and mass persuasion.
635. **Problems in Latin American Social Development.** (2:2:0) Prerequisite: graduate standing. Craig, Spencer
Problems of development: migration, land tenure, population, education, religion, colonization, labor organization, peasant movements, and social mobility. (Formerly Sociol. 671.)
640. **Familial Role Structure.** (3:3:0) Prerequisite: Sociol. 340. Bradford, Kunz
Analysis of various roles in the family in various societies, with emphasis on the United States. (Formerly Sociol. 660.)
670. **Contemporary Urban Social Structure.** (3:3:0) Prerequisite: Sociol. 370. Staley
Research-oriented examination of social forces in contemporary urban life which influence patterns of human interaction. (Formerly Sociol. 626.)

- 675. Seminar in Problems of Rural Society.** (3:2:1) Prerequisite: consent of instructor.
Field-type training, with on-the-job contacts with county agents, etc.
(Formerly Sociol. 692.) Christiansen
- 697R. Directed Research.** (1-3:0:2-6)
(Formerly Sociol. 694.)
- 699. Thesis for Master's Degree.** (6-9:Arr.:Arr.)
- 706. Advanced Statistical Methods.** (2:2:0) Prerequisite: Sociol. 606. England
Factor analysis, multivariate analysis, and covariate analysis. (Formerly Sociol. 701.)
- 720. Seminar: Social Organization.** (2:2:0) Prerequisites: Sociol. 111 and 320.
(Formerly Sociol. 791.) Kunz, Warner
- 740. The Family.** (2:2:0) Prerequisite: Sociol. 540. Bradford
(Formerly Sociol. 760.)
- 750. Seminar: Social Psychology.** (2:2:0) Prerequisites: Sociol. 350 and consent of instructor. Blake, Larsen
(Formerly Sociol. 792.)
- 799. Dissertation for Ph.D.** (Arr.)

Speech and Dramatic Arts

Professors: Bateman, Clinger, Gledhill, Hansen, Low, Metten, Mitchell, Morley, Newman (chairman, D-581 HFAC), Woodbury.

Associate Professors: Stephan, Struthers, Weaver.

Assistant Professors: Gibb, K. Jones, Oaks, Pope, Whitman.

Programs:

Dramatic Arts: Master of Arts (M.A.), Doctor of Philosophy (Ph.D.).

Speech: Master of Arts (M.A.).

Communicative Habilitation: Master of Science (M.S.), Master of Communicative Habilitation (MCH).

Application Consideration Dates: Same as Graduate School deadlines.

Entry Times: Any regular registration.

Dramatic Arts: Master of Arts

Prerequisites: Acceptable undergraduate background in dramatic arts.

Fields: Theatre history, acting, directing, interpretation, technical theatre, playwriting.

Minors Permissible: Option I or Option II.

Requirements: 24 hours plus thesis (6-hr. min.—699); or, 40 hours plus a major research paper and a written comprehensive examination.

Required Course: Sp. and Dram. Arts 690.

Dramatic Arts: Doctor of Philosophy

Fields: Directing, playwriting, interpretation, criticism.

Requirements: 45 hours in drama, 15 hours in a minor, plus a dissertation (18-

hr. min.—799). Three kinds of dissertation research will be accepted: (1) scholarly analysis of history, theory, and criticism; (2) research and strong creative achievement in playwriting and theatrical production; and (3) measurement studies.

Required Courses: Sp. and Dram. Arts 690, 797R, and 799.

Speech: Master of Arts

Prerequisites: Undergraduate major or minor in speech or equivalent.

Entrance Examination Required: Miller Analogies Test.

Fields: Communication and rhetorical theory, forensics, business and professional speaking, general speech education.

Minors Permissible: Option I or Option II.

Requirements: 24 semester hours plus thesis (6-hr. min.—699); or, 40 semester hours, a major research paper, plus a written comprehensive examination.

Required Courses: Sp. and Dram. Arts 523, 601, 690; any two of 621, 622, 623, or 624; two hours of 693 or 694.

Communicative Habilitation: Master of Communicative Habilitation

Prerequisites: Undergraduate major in communicative habilitation or its equivalent; and Psych. 111; Physics 167; CDFR 210; Math. 305; Ed. 260, 301A, 402, 420, 421, and 449 or equivalents. Clinical audiology majors may be excused from certain of these prerequisites with permission of the audiology faculty.

Fields: Resource teacher for children with disorders of communication, speech therapy, speech pathology, educational audiology.

Minor Permissible: Option II only.

Requirements: 34 semester hours including internship, special project, and a minimum of 8 semester hours of credit in education relevant to communicative habilitation.

Required Courses: Sp. and Dram. Arts 630, 631, 632, 633, 644R, 680R, or equivalents; Stat. 552. Five of the following six courses: Sp. and Dram. Arts 640, 642, 643, 646, 647, and 648, or their equivalents. Educational audiology majors will substitute appropriate courses in audiology for some of these courses under the advisement of the audiology faculty.

Communicative Habilitation: Master of Science

Prerequisites: Same as for Master of Communicative Habilitation.

Fields: Clinical audiology, speech science.

Minors Permissible: Psychology, physics, zoology, or Option II.

Requirements: 28 hours plus thesis (6-hr. min.—699).

Required Courses: Sp. and Dram. Arts 630, 631, 632, 633, 681R, or equivalents; Stat. 552. Five of the following six courses in audiology for majors in audiology: Sp. and Dram. Arts 644R, 650, 651, 652, 653, 656. Electives: any graduate course in speech pathology; or Psych. 360, 374, 378, 445, 562, and 574.

Courses

521. History of Speech Education. (2:2:0)

Frost

523. Rhetorical Theory. (2:2:0)

Bateman, Gibb

525. Debate Coaching. (1-2:1-2:0)

Richardson

527. **Storytelling.** (2:2:0) Clinger, Frost
528. **Repertory Theatre.** (3:2:6) Prerequisite: consent of instructor.
529. **Repertory Theatre.** (3:2:6) Prerequisite: consent of instructor.
- 560R. **Theatre Workshop.** (2-4:2-4:2 ea.) Home Study also.
564. **Theatre History I.** (3:3:0) Hansen
The history of the theatre: Primitive, Egyptian, Greek, Roman, Medieval, and Elizabethan periods.
565. **Theatre History II.** (3:3:0) Metten, Woodbury
The history of the Western and Oriental theatres: Renaissance to the present.
572. **Children's Theatre.** (2:2:1) Mitchell, Whitman
- 578R. **Playwriting.** (1-2:1-2:0 ea.) Hansen, Whitman
590. **Selected Readings and Projects in Public Address.** (1-2:0:0)
Opportunity for expression of independent research and experimental work in special reading and public address projects over and beyond or outside of usual thesis work.
601. **Psychology of Public Address.** (2:2:0) Prerequisites: Sp. and Dram. Arts 101, 401, or 403. Gibb, Stephan
621. **Ancient Rhetoric and Oratory.** (3:3:0) Stephan
622. **British Public Address.** (3:3:0) Stephan
623. **American Public Address.** (3:3:0) Bateman
624. **Contemporary Public Address.** (3:3:0) Bateman
630. **Methods and Problems of Research in Communication Disorders.** (2:2:0) K. Jones, Weaver
631. **Seminar in the Generation and Perception of Acoustic Stimuli.** (2:2:0) Weaver
632. **Dynamics of Human Communication.** (2:2:0) Newman
633. **Anatomy and Physiology of Human Communication.** (2:2:0) Prerequisites: Zool. 105, 261, 262. Newman
634. **Scientific Foundations of Human Communication.** (2:2:1) Prerequisite: Physics 167.
640. **Stuttering.** (2:2:1) Newman
642. **Voice Disorders.** (2:2:1) Jones
643. **Communication Disorders of the Cerebral Palsied.** (2:2:1) Jex
- 644R. **Special Problems in the Communicative Disorders.** (1-3:1-3:0 ea.) Prerequisite: consent of instructor.
646. **Oro-Facial Communication Disorders.** (2:2:1) Newman
647. **Communication Disorders of the Mentally Retarded.** (2:2:1) Low
648. **Aphasia.** (2:2:1) Low
650. **Clinical Audiology.** (2:2:2) Prerequisite: Sp. and Dram. Arts 351. Weaver
651. **Community and Industrial Audiology.** (2:2:1) Prerequisite: Sp. and Dram. Arts 351. Weaver
652. **Pediatric Audiology.** (2:2:1) Prerequisite: Sp. and Dram. Arts 351. Moore

653. **Hearing Aids and Instrumentation.** (2:2:0) Prerequisite: Sp. and Dram. Arts 351. Weaver
656. **History, Education, and Guidance of the Hearing Impaired.** (2:2:0) Prerequisites: Sp. and Dram. Arts 130; Ed. 260. Weaver
657. **Teaching Speech to the Hearing Impaired.** (2:2:2) Prerequisites: Sp. and Dram. Arts 130, 231. Moore
660. **Theory of Interpretation.** (2:2:0) Prerequisites: Sp. and Dram. Arts 121, 123, 325, or equivalent. Gledhill, Golightly
Study of the theories of Plato, Aristotle, Horace, Quintilian, Longinus, Bulwer, and Burgh relevant to the art of oral interpretation, and of the theories of Sheridan, Walker, and later writers who continued such analyses.
661. **Oral Interpretation of Classical Literature.** (2:2:0) Prerequisites: Sp. and Dram. Arts 121, 123, 325, or equivalent. Metten, Woodbury
Analysis of the classic forms of poetry and of the interpretation theories and techniques appropriate to their artful performance.
663. **Program Building and Lecture Recital.** (2:2:0) Prerequisites: Sp. and Dram. Arts 121, 123, 325, or equivalent. Gledhill, Metten
667. **History of Acting.** (2:2:0) Prerequisite: Sp. and Dram. Arts 423R. Woodbury
668. **Special Studies in Theatre History.** (1-3:1-3:0)
670. **Advanced Theory and Practice in Technical Theatre Production.** (2:2:0) Prerequisites: Sp. and Dram. Arts 319, 320, 675, or consent of instructor. Analysis and application of design theory.
671. **Experimental Theatre.** (2:2:0) Prerequisites: Sp. and Dram. Arts 460, 461R, or equivalent. Hansen
Theory and practice in directing nonconventional dramatic literature.
672. **Problems of the Producing Director.** (2:2:0) Hansen
673. **Advanced Play Production—Directing.** (2:2:0) Prerequisite: Sp. and Dram. Arts 460 or equivalent. Woodbury
- 674R. **Projects in Theatre.** (1-4:1-4:0 ea.)
Supervised applied theory in playwriting, directing, acting, and stagecraft.
- 675, 676. **Stage Design.** (2:2:1 ea.) Prerequisites: Sp. and Dram. Arts 319, 320, or equivalent. Henson, Pope
678. **Stage Lighting.** (1-2:1-2:0) Prerequisites: Sp. and Dram. Arts 319, 320, or consent of instructor. Pope, Struthers
- 680R. **Internship Practicum in Speech Pathology.** (1-2:0:4 ea.)
- 681R. **Internship Practicum in Audiology.** (1-2:0:4 ea.)
683. **Graduate Practicum in Audiology.** (1-2:0:1-2) Prerequisite: Sp. and Dram. Arts 351. Weaver, Jones
Must be taken concurrently with either Sp. and Dram. Arts 650 or 653.
690. **Methods and Problems of Research in Speech and Dramatic Arts.** (2:2:0)
Required of all graduate students. It is imperative that students take this course during their first semester.
- 691R. **Research in Oral Communication: The Historical-Critical Approach.** (1-4:1-4:0 ea.) Prerequisite: Sp. and Dram. Arts 690 or equivalent. Bateman
- 692R. **Research in Oral Communication: The Quantitative Approach.** (1-4:1-4:0 ea.) Prerequisite: Sp. and Dram. Arts 690 or equivalent. Gibb
- 693R. **Seminar in Persuasion.** (1-3:1-3:0) Gibb, Stephan

694. Seminar in Public Address. (1-3:1-3:0) Bateman, Stephan
695. Seminar in Readers Theatre. (1-3:1-3:Arr.) Gledhill
696. Seminar in Interpretation. (1-3:1-3:0) Gledhill, Metten
- 697R. Seminar in Arena Theatre. (1-4:1-4:0 ea.) Hansen
699. Thesis for Master's Degree. (6-9:Arr.:Arr.)
731. Dramatic Theory and Criticism I. (3:3:0) Metten
The history and principles of dramatic theory and criticism from Plato to Lessing.
732. Dramatic Theory and Criticism II. (3:3:0) Metten
The history and principles of dramatic theory and criticism from Lessing to Langer.
733. Dramatic Theory and Criticism III. (3:3:0) Hansen
A study and analysis of the major dramatic forms: tragedy, comedy, melodrama, farce.
740. Seminar in the Theory and History of Theatrical Costuming. (2:2:1)
772. Directing and Staging I. (3:3:0) Prerequisite: Sp. and Dram. Arts 673.
Woodbury
Theory and technique of directing and staging historical and period plays: Greek, Roman, Medieval, Elizabethan, Restoration, and Continental plays before 1841.
773. Directing and Staging II. (2:2:0) Woodbury
Theory and technique of directing and staging plays from the modern and abstract repertoire: Expressionism, Constructivism, Epic, Romanticism, Absurd, Oriental, Cruelty, Happenings.
- 797R. Research. (1-6:Arr.:Arr. ea.)
799. Dissertation for Ph.D. Degree. (Arr.)

Statistics

Professors: Carter, Nielson, Richards.

Associate Professors: Faulkner, Hilton (chairman, 206 MSCB).

Assistant Professors: Beus (graduate coordinator, 248 MSCB), Hendrix, Rencher.

Program: Master of Science (M.S.).

Entrance Examinations Required: None.

Application Consideration Dates: Fall Semester, June 30; Winter Semester, November 15; Spring or Summer terms, March 10. If application is also made for financial assistance, all forms should be received three months prior to each of the above deadlines.

Entry Times: Fall Semester recommended, or Spring Term if Stat. 501 (or equivalent) has not been completed.

Master of Science

Prerequisites: Stat. 501, Math. 214, and Comput. Sci. 131 or their equivalents.

Fields: Applied or theoretical statistics.

Minors Permissible: Option I.

Requirements: Minimum of 24 semester hours plus thesis (6-hr. min.—699).

Required Courses: Stat. 621 and 636; Math. 541 (unless advanced calculus has been completed previously); and registration for Stat. 591R each semester in residence. Foreign students may be required to take English 101 or 102, depending on the outcome of an interview with the department after their arrival at Brigham Young University.

This program is designed to prepare students for (1) work in industry or government or (2) Ph.D. work in statistics.

Minor Programs

Master's Level: 9 hours in any statistics course numbered 300 and above (except 552).

Ph.D. Level: Stat. 421 and 422, plus 9 additional hours from statistics courses numbered 433 and above (except 501, 552, and 554).

Courses

501. **Statistics for Research Workers I.** (5:4:3) Prerequisite: Math. 105 or equivalent. Beus, Carter, Hilton
Probability; estimation; tests of hypotheses; regression; analysis of variance; nonparametric methods. For natural or social science students.
502. **Statistics for Research Workers II.** (5:4:3) Prerequisite: Stat. 501 or equivalent. Beus, Carter, Hilton
Analysis of covariance; multiple regression; linear models; design of experiments; sampling. For natural or social science students.
511. **Applications of Computers to Statistical Problems.** (3:3:3) Prerequisite: Stat. 336 or 501. Carter, Crandall
Standard statistical routines; Monte Carlo simulation; unequal cell frequencies. For natural or social science students.
522. **Theory of Linear Models.** (3:3:0) Prerequisites: Stat. 421 and concurrent registration in Stat. 422. Nielson, Rencher, Richards
Linear hypotheses, with application to regression and design.
531. **Experimental Design.** (3:3:0) Prerequisites: Stat. 330, 336, or 501. Carter, Hilton
Randomized blocks, Latin squares, factorial designs, fractional replication, confounding, and incomplete blocks.
534. **Sampling.** (3:3:0) Prerequisite: Stat. 336 or equivalent. Nielson
Systematic, simple random, stratified, and cluster sampling; optimum allocation; ratio estimation, etc. Applications to various fields.
536. **Regression Analysis.** (3:3:0) Prerequisite: Stat. 336 or 501. Carter, Rencher
Multiple regression; introduction to model building and nonlinear estimation; examination of residuals; step-wise regression; Hocking-Leslie algorithm.
541. **Advanced Probability.** (3:3:0) Prerequisite: Math. 214. Recommended: completion of or concurrent registration in Stat. 421. Burton, Faulkner
Advanced combinatorial methods; random walk; introduction to Markov chains and stochastic processes.
552. **Statistical Methods in Education I.** (3:3:0) Prerequisite: consent of instructor. Hendrix
Measures of central tendency, variability; correlations; introduction to probability and statistical inference. Computer usage stressed. For majors in education and related fields.
554. **Statistical Methods in Education II.** (3:3:0) Prerequisite: Stat. 552. Hendrix
Educational application, with the computer, of analysis of variance and covariance, multiple and partial regression and correlation, and nonparametric methods. Introduction to experimental design.

- 591R. Graduate Seminar in Statistics.** ($\frac{1}{2}$:1:0 ea.)
- 621, 622. Advanced Theory of Statistics I, II.** (3:3:0 ea.) Prerequisites: Math. 541; Stat. 422. Recommended: Stat. 522. Faulkner, Nielson, Rencher
Advanced topics in the theory of estimation, testing hypotheses, multiple regression, and multivariate analysis.
- 623. Analysis of Variance.** (3:3:0) Prerequisites: Stat. 422, 522 or equivalent. Nielson, Richards
Theory of analysis of variance for fixed, random, and mixed models; Latin squares; incomplete blocks; nested designs.
- 631. Advanced Experimental Design.** (3:3:0) Prerequisites: Stat. 422, 531. Recommended: Stat. 522. Carter, Nielson
Advanced topics in experimental design.
- 632. Advanced Industrial Statistics and Reliability.** (3:3:0) Prerequisites: Stat. 422, 432 or equivalent. Richards
Advanced topics in sequential sampling, tolerance limits, life testing, and reliability.
- 636. Advanced Statistical Methods.** (3:3:0) Prerequisites: Stat. 336, 422, or 501. Carter, Richards
Analysis of variance with unequal subclass frequencies, including missing cells; analysis of covariance; orthogonal polynomials; multiple comparisons and related topics.
- 641. Advanced Topics in Probability I.** (3:3:0) Prerequisites: Math. 542; Stat. 422, 541. Burton, Faulkner
Advanced topics in Markov chains, stochastic processes, and information theory.
- 642. Advanced Topics in Probability II.** (3:3:0) Prerequisites: Math. 542; Stat. 541, 621. Recommended: Stat. 641; Math. 641. Burton
A measure theoretic approach to probability including Borel sets, characteristic functions, measure spaces, measurable functions.
- 690R. Special Topics in Statistics.** (3:3:0 ea.) Prerequisite: consent of instructor.
Varied specialized topics in statistics.
- 695. Readings in Statistics.** (1-3:1-3:0) Prerequisite: consent of department.
- 699. Thesis for Master's Degree.** (6-9:Arr.:Arr.) Prerequisite: consent of department.

Zoology

Professors: Allen, Allred, Chapman, Frost, C. L. Hayward (emeritus), Heninger, Murphy (chairman, 575-A WIDB), Nicholes, V. Tanner (emeritus), W. Tanner, Tipton, Wood.

Associate Professors: Andersen (graduate coordinator, 155 WIDB), Jaussi, Jorgensen, Miller.

Assistant Professors: Bradshaw (on leave), Braithwaite, Farmer, Smith, C. White, D. White, Whitehead.

Programs: Master of Science (M.S.), Doctor of Philosophy (Ph.D.).

Entrance Examinations Required: Graduate Record Examination prior to consideration for admission and a departmental written examination during the first semester of resident study.

Application Consideration Dates: Prior to March 1 for Fall Semester and November 1 for Winter Semester.

Entry Times: Fall or Winter semesters.

Master of Science

Prerequisites: B.S. degree in zoology from an accredited college or university, or the equivalent.

Fields: Aquatic zoology, ecology, entomology, genetics, herpetology, histology, ichthyology, invertebrate zoology, mammalogy, marine biology, medical entomology, molecular biology, ornithology, parasitology, physiology, taxonomy, vertebrate paleontology, zoogeography, biological science education.

Minors Permissible: Any established minor in the biological or physical sciences; Option II.

Requirements: Minimum of 30 semester hours including thesis (6-hr. min.—699). (Consult graduate coordinator for modified requirements in biological science education.)

Required Courses: Zool. 521, 620; 696R during each semester of resident study.

Doctor of Philosophy

Prerequisites: Master's degree in zoology or the equivalent. Option II for the two-language requirement or its equivalent may be met by completing 9 credit hours in computer science courses (130 and above, excluding 131), in mathematics (112 and above), in statistics (502 and above), or with a combination of 9 credit hours from these fields.

Fields: Aquatic zoology, ecology, entomology, medical entomology, parasitology, physiology, systematic zoology, vertebrate zoology.

Minors Permissible: Any established minor in the biological or physical sciences.

Requirements: Minimum of 24 semester hours plus dissertation (18-hr. min.—799), plus one semester of off-campus study recommended unless M.S. is completed elsewhere.

Required Courses: Zool. 521, 620; 696R during each semester of resident study.

Courses

517. **Experimental Parasitology.** (3:2:3) (Offered 1973-74 and alternate years)
Prerequisite: Zool. 317 or 417. Andersen
520. **Research Organization and Reporting.** (1:1:1) Allred
521. **Zoological Literature.** (2:2:0) Wood
Literature of zoology applicable to research and writing.
- ☐ Botany 522. **Biological Instrumentation.** (3:1:6)
- ☐ Botany 525. **Ultrastructural Interpretation.** (3:3:0)
530. **Insect Classification.** (4:1:6) Prerequisite: Zool. 430. Wood
531. **Internal Morphology and Physiology of Insects.** (4:2:6) Prerequisites: Zool. 430; Chem. 151 or 351. Whitehead
534. **Economic Entomology.** (3:2:2) (Offered 1972-73 and alternate years)
Prerequisite: Zool. 331. Jorgensen
535. **Medical Entomology.** (2:1:2) Prerequisite: Zool. 331. Recommended: Micro. 331. Tipton
Arthropods which affect the health of man and domestic animals.
538. **Immature Insects.** (2:0:4) (Offered 1973-74 and alternate years) Wood
543. **Ichthyology.** (2:2:2) Home Study also. Prerequisite: Zool. 203. White
Anatomy, classification, and ecology of the fishes.

- 545. Herpetology.** (2:1:2) Prerequisite: Zool. 203. Tanner
Classification, ecology, and natural history of reptiles and amphibians.
- 546. Ornithology.** (2:1:2) Prerequisite: Zool. 203. Frost
Classification, field and laboratory identification, and natural history of birds.
- 547. Mammalogy.** (2:2:2) Prerequisite: Zool. 203. Smith
- 551, 552. Population Ecology I, II.** (2:1:3 ea.) (Offered 1972-73 and alternate years) Prerequisite: Zool. 451, 551; concurrent registration in or completion of Stat. 501 and 502 or equivalents. Jorgensen
Principles of population ecology and methods of research. Field trips scheduled five Saturdays.
- 556. Limnology.** (3:2:2) Prerequisite: Zool. 451 or equivalent. White
Interactions of biota within freshwater systems. Field trips scheduled four Saturdays.
- 561. Advanced Vertebrate Anatomy.** (3:1:4) (Offered 1972-73 and alternate years) Prerequisite: Zool. 363. Tanner, Miller
- 565. Endocrinology.** (3:3:0) Prerequisite: Zool. 465 or equivalent. Heninger, Jaussi
- 566. Experimental Endocrinology.** (2:0:6) Prerequisite: Zool. 465. Heninger, Jaussi
- 574. Molecular Biology.** (3:3:0) Prerequisites: Chem. 581; course in genetics. Farmer
Molecular basis of physiology, with emphasis on cellular control systems and biochemical genetics.
- 576. Human Genetics.** (3:3:0) (Offered 1972-73 and alternate years) Prerequisite: Zool. 376 or Bot. 376.
Genetics of physical and mental characteristics of man; heredity and environment; genetics of human populations.
- 577. Developmental Genetics.** (3:3:0) (Offered 1973-74 and alternate years) Prerequisites: Zool. 483; and Zool. 376 or Bot. 376.
Control of gene expression during embryonic development; genetic mechanisms of cell differentiation.
- 581. Experimental Embryology.** (2:1:3) (Offered 1972-73 and alternate years) Prerequisite: Zool. 483.
- 582R. Advanced Topics in Embryology.** (2:2:0 ea.) Prerequisite: Zool. 483.
- 583. Etiology and Pathology of Brain Injury.** (3:2:2) Prerequisite: consent of instructor. Chapman
May not be used for credit toward a major in zoology.
- 584. Neurology.** (2:1:2) Prerequisite: consent of instructor. Chapman
Functional anatomy of the nervous system, including the principal nervous pathways.
- 591R. Special Problems in Zoology.** (1-2:Arr.:Arr. ea.) Prerequisite: consent of instructor.
- 601. Zoogeography.** (2:2:0) Frost, Tanner
- 609. Systematic Zoology.** (2:1:2) (Offered 1972-73 and alternate years) Wood
- 612. Advanced Invertebrate Zoology I.** (3:2:3) Prerequisite: Zool. 202 or consent of instructor. Braithwaite
Comprehensive biology of the lower Metazoa (Parazoa, Radiata, Acoelomata, Pseudocoelomata, and lower Protostomia).

613. **Advanced Invertebrate Zoology II.** (3:2:3) Prerequisite: Zool. 612 or consent of instructor. Braithwaite
Comprehensive biology of the higher Protostomia and Deuterostomia, excluding the terrestrial arthropods.
620. **Theoretical Zoology.** (2:2:0) Prerequisite: consent of instructor. Tanner
- ☐ Botany 621. **Electron Microscopy.** (2:2:0)
- ☐ Botany 622. **Electron Microscopy Laboratory.** (1:0:3)
632. **Arachnology.** (3:1:6) (Offered 1973-74 and alternate years) Allred
- 633R. **Advanced Topics in Entomology.** (1-2:Arr.:Arr. ea.) Prerequisite: consent of instructor.
- 644R. **Advanced Topics in Vertebrate Zoology.** (1-4:Arr.:Arr. ea.) Prerequisite: consent of instructor.
Studies in ichthyology, herpetology, ornithology, or mammalogy.
- 651, 652. **Community Ecology I, II.** (2:1:3 ea.) Prerequisites: Zool. 451; concurrent registration in or completion of Stat. 501 and 502 or their equivalents. Smith, White
Principles of community ecology and methods of research. Field trips scheduled five Saturdays.
- 657R. **Advanced Topics in Animal Ecology.** (2:2:0 ea.)
Specific topics will be announced.
662. **Advanced Physiology I.** (2:1:2) Prerequisite: Zool. 465 or consent of instructor. Jaussi, Heninger
663. **Advanced Physiology II.** (2:1:3) Prerequisite: Zool. 465 or consent of instructor. Jaussi, Heninger
681. **Advanced Histology.** (2:0:4) (Offered 1973-74 and alternate years) Prerequisite: Zool. 380. Chapman
- 696R. **Graduate Seminar.** ($\frac{1}{2}$:1:0 ea.)
699. **Thesis for Master's Degree.** (Arr.)
799. **Dissertation for Ph.D. Degree.** (Arr.)

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